NDSU DEPARTMENT OF COMPUTER SCIENCE AND OPERATIONS RESEARCH

ANNUAL REPORT 2010–2011

Primary Contact:
Dr. Kenneth Magel, Associate Head
Kenneth.Magel@ndsu.edu

Carole Huber, Administrative Assistant
Carole.Huber@ndsu.edu
Dr. Anne Denton teaches courses in database management, bioinformatics, problem solving and foundations of computer science. Her research interests include data mining, bioinformatics, course management systems for distance education, and computational physics. Anne was promoted to Associate Professor with tenure effective August 2009.

Dr. Hyunsook Do joined the faculty in the Fall of 2007. She teaches courses in networks, network security, and software engineering. Her research program concerns software engineering, particularly software testing, maintenance, and empirical methodologies.
Dr. King joined our faculty in Fall 2009. He teaches Formal Methods for Software Development and Software Testing and Debugging. His research interests include software testing, autonomic and self-managing systems, model-driven software development, and software maintenance.

Dr. Wei Jin joined the faculty in the Fall of 2008. She teaches courses in comparative languages and information retrieval. Her research interests focus on Text Mining, Information Retrieval and social Network analysis and Bioinformatics.

Dr. Kong is interested in visual modeling languages, model driven development and web-data interoperation. He teaches courses in operating systems and human computer interaction.
Dr. Juan Li joined the faculty in the Fall of 2008. She teaches courses in artificial intelligence, parallel and distributed simulations. Her research interests are in networking and distributed systems.

Dr. Knudson is coordinator of the capstone program for bachelor of science students in CS and MIS. In this role he develops external sponsors for projects and mentors the student teams in project management. He teaches CSci 445, Capstone: Software Projects. Dr. Knudson has extensive experience working as a development executive for Microsoft and several other companies. He is a half-time Associate Professor.
Dr. Simone Ludwig joined the faculty in the Fall of 2010. She teaches courses in assembly programming and artificial intelligence. Her research interest combines distributed computing with artificial intelligence.

Dr. Magel teaches a wide variety of courses, including software engineering, programming languages, and social implications of computing. His software engineering research activities explore what makes programming difficult and programs complex. Dr. Magel conducts seminars and courses in XML, C# and .net technologies. He coordinates the graduate programs in software engineering. Beginning July 1, 2007 he became Associate Head for the Department.

Dr. Kendall E. Nygard, Professor and Graduate Coordinator
PhD, Virginia Polytechnic Institute and State University, 1978
Dr. Nygard teaches courses in simulation, social implications of computing, mathematical modeling, network optimization, systems analysis and design, and software testing and maintenance. His research interests include software systems for military mission planning for cooperative control of autonomous aircraft systems, software agents, and geographic information systems (GIS) for school transportation. Primary sponsors of his research are the Air Force and Navy. Starting in summer, 2006 he became graduate coordinator for the Department.

Dr. William Perrizo, University Distinguished Professor
Ph.D., University of Minnesota, 1972

Dr. Perrizo teaches courses in database systems, data mining, bioinformatics, and networks. His research interests include database and information systems, data mining, data warehousing, distributed database systems, bioinformatics, precision agriculture, and remotely sensed data management and visualization. His research has been funded by many federal and private sources. Dr. Perrizo is a co-founder of the worldwide Virtual Conference on Bioinformatics. Dr. Perrizo has served in leadership roles for many conferences and on many boards and has a strong international reputation in research. In fall, 2007, he became one of the first seven University Distinguished Professors at NDSU, and in spring, 2008, was named Fargo-Moorhead Chamber of Commerce Professor

Dr. Saeed Salem, Assistant Professor
Ph.D., Rensselaer Polytechnic Institute, NY 2009

Dr. Salem joined the faculty Fall of 2009. He teaches courses in Bioinformatics and Data Mining. His research interests are in bioinformatics, biological networks, data mining and machine learning.
Dr. Brian M. Slator, Professor and Department Head
Ph.D., New Mexico State University, 1988

Dr. Slator teaches courses in artificial intelligence (AI), multimedia educational systems, computer science problem solving, and comparative languages. His research interests revolve around active environments for learning, including the use of software agents, case-based reasoning, knowledge representation, multimedia systems, distance education, synthetic environments, and multi-user educational games. Dr. Slator is a recipient of the Ernest L. Boyer International Award for Excellence in Teaching, Learning and Technology. Since fall, 2007, he has been Department Head.

Dr. Vasant Ubhaya, Professor
Ph.D., University of California, Berkeley, 1971

Dr. Ubhaya teaches courses in Discrete Mathematics, Algorithm Analysis, Performance Evaluation, Mathematical Programming, and Dynamic Programming. He does research in Algorithms, Optimization and Approximation, and publishes his results regularly in journals. He is often invited by professional societies to organize and chair sessions, and give talks at their meetings. His research has been supported by the National Science Foundation and EPSCoR.
Dr. Walia joined the faculty in Fall of 2009. He teaches courses in Software Project Planning and Empirical Software Engineering. His research interests are empirical software engineering, psychology in software engineering, software quality, information assurance and software engineering for computer security.

Dr. Yan joined the faculty in Spring of 2010. He teaches courses in Bioinformatics. His research interests include developing computational methods and tools to assist biologists to investigate problems in complex biological systems.

Dr. Weiyi (Max) Zhang, Assistant Professor
PhD, Arizona State University, 2007
Dr. Zhang joined the faculty in the Fall of 2007. He teaches courses in object oriented systems, and software engineering. His research interests are networking and bio-informatics. During the period January until September, 2011, Dr. Zhang went on developmental leave to work on a special project with AT&T. He resigned from NDSU effective August 15, 2011, to pursue a career in industry.

LECTURERS

Joan Krush, Academic Advisor/ Lecturer
MA, University of Iowa

Ms. Krush joined the faculty Fall 2009 as a halftime lecturer and advisor. Joan has a MA in student development in Postsecondary Education. She assists our students with their advising needs, leads student recruiting, and teaches sections of University 189.

Ms. Dana Johnson, Adjunct Senior Lecturer
MS, University of Denver, 1980

Ms. Johnson is retiring from the teaching of distance education courses for us starting summer, 2011.
Dr. Abufardeh teaches courses in Java. His research interest has been in the area of requirements engineering. He received his Ph.D. from the Department in fall, 2008.

Mr. Rummelt teaches courses in Java and the advanced Visual Basic .NET courses. His research interest has been in the area of requirements engineering. He is an active Ph.D. student. Starting in spring, 2006, he is the faculty advisor for our new chapter of UPE, the Computer Science Honor Society. Starting in spring, 2009, Richard became the ACM Student Chapter advisor. Mr. Rummelt was promoted to Senior Lecturer starting August, 2009.
Dr. Myronovych teaches courses in Java and the advanced Visual Basic .NET courses. Her research interest has been in the area of requirements engineering. She received a Ph.D. in 2009. She is currently the Treasurer/Secretary for the student chapter of UPE, the Computer Science Honor Society. Dr. Myronovych was promoted to Professor of Practice in December 2010.

Mr. Kotala teaches courses in systems analysis and design and foundations of programming for MIS majors. He also teaches the distance and continuing education sections of business use of computers.
Adam Helsene is the department systems administrator and does all the maintenance and purchasing of all the computer equipment. He also does the configurations for the departmental instructional laboratories. He teaches the Introduction to UNIX in the fall semesters.

Ms. Huber coordinates the administrative functions of the department. This includes managing research and appropriated funds, purchasing and accounts payable. She is the contact person for all student employment applications, time-slips, and tuition waivers. She coordinates all Teaching/Research/Grading positions for the department.
Ms. Opheim carries out inventory, equipment and software support functions and assists in back-up office support. She is half-time.

Ms. Sculthorp carries out office support functions, including data development, reporting, survey work, and assisting students and faculty. She is the assistant to the Graduate Coordinator.
Mr. Otto Borchert began his Programmer Analyst position August 2007. His duties include educational games, research and software development.

Mr. Guy Hokanson began his Programmer Analyst position August 2007. His duties include educational games, research and software development.
I. Goals/accomplishments for the 2010-2011

Major Accomplishments for the Department in 2010-11

1. The Department continued funded activities which received $930,925. New grants during this year totaled $1,277,587. This is an increase of more than one hundred twenty percent in new grants over last year. Altogether, fourteen faculty, five undergraduate students, and seventy-nine graduate students were involved in grants during this year;
2. The faculty published 73 refereed articles, 28 other articles, and made 34 presentations during 2009-10;
3. There were 3 Graduate Certificates in Software Engineering, 21 M.S. in Computer Science, 12 M.S. in Software Engineering, 1 Ph.D. in Computer Science, and 1 Ph.D. in Software Engineering graduated during this year;
4. We have 208 graduate students and 259 undergraduate majors;
5. We gained full University approval for extensive modifications of our B.S. and B.A. degree programs with implementation starting in fall, 2011;
6. The Master of Software Engineering online program had ten students in 2010-11 and should graduate its first student in 2012.
7. Dr. Anne Denton was named James A Meier Junior Professor for the College of Science and Mathematics, and Dr. Dean Knudson won the NDSU Peltier Award for Innovation in Instruction.
8. The NDSU Computer Science Industry Consortium Program (ICP) was founded with initial membership of Phoenix International, Agri ImaGIS, American Crystal Sugar, and RDO Equipment.

A. INSTRUCTION AND STUDENT SUCCESS

Exit Interviews

During 2010-11, the Department continued to interview graduating seniors. Each senior was asked to fill out an online questionnaire as part of the CSci 445 capstone course.

Capstone Projects:

The 2010-11 academic year marked the nineth year in which capstone projects for seniors in CS have been sponsored by external constituencies, primarily private corporations. The intent is to help students develop a strong background in real software development issues, learn software project management skills, and develop the ability to work in teams. Successful student teams use many of the skills they learned in earlier Computer Science courses. The sponsors for spring semester, 2011 were:

<table>
<thead>
<tr>
<th>Sponsor</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agri-ImaGIS</td>
<td>Microsoft</td>
</tr>
<tr>
<td>Air Academy</td>
<td>NDSU CS</td>
</tr>
<tr>
<td>ATC</td>
<td>NDSU PS</td>
</tr>
<tr>
<td>Blue Cross Blue Shield</td>
<td>NICS</td>
</tr>
<tr>
<td>Intelligent Insites</td>
<td>Phoenix International</td>
</tr>
</tbody>
</table>
We were particularly happy that more than half of these companies had sponsored capstone projects in the past. We received inquiries from another eight companies who wished to sponsor projects, but whom we were unable to accommodate.

### Capstone Project Student Survey – Results for Spring 2011

**Knowledge in Scientific and Technical Areas**: Did you have enough background from your class work to be able to learn what you needed to in order to make a good contribution to your project? (If not, should something be added to the curriculum?)

<table>
<thead>
<tr>
<th>Rating</th>
<th>Very Good</th>
<th>Good</th>
<th>Marginal</th>
<th>Poor</th>
<th>N/A</th>
<th>Score</th>
</tr>
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<tbody>
<tr>
<td>Number</td>
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<td>21</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2.08</td>
</tr>
</tbody>
</table>

**Teamwork/Dedication to task**: Did your team members work well together and show a dedication to completing your project on time and with high quality?

<table>
<thead>
<tr>
<th>Rating</th>
<th>Very Good</th>
<th>Good</th>
<th>Marginal</th>
<th>Poor</th>
<th>N/A</th>
<th>Score</th>
</tr>
</thead>
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<tr>
<td>Number</td>
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<td>12</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>1.76</td>
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</table>

**Communication/Status Reporting**: How good were communications with your mentor and sponsor throughout the semester?

<table>
<thead>
<tr>
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<th>Good</th>
<th>Marginal</th>
<th>Poor</th>
<th>N/A</th>
<th>Score</th>
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<tr>
<td>Number</td>
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<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1.16</td>
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</tbody>
</table>

**Capstone Project Value**: Overall, what is your opinion of the value of the NDSU Computer Science Capstone Program?

<table>
<thead>
<tr>
<th>Rating</th>
<th>Very Good</th>
<th>Good</th>
<th>Marginal</th>
<th>Poor</th>
<th>N/A</th>
<th>Score</th>
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<tbody>
<tr>
<td>Number</td>
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<td>12</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1.32</td>
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</table>

**Classroom lecture material**: Were the classroom lectures (setting software engineering guidelines, etc.) of value? (What parts were of most value? What parts were of least value?)

<table>
<thead>
<tr>
<th>Rating</th>
<th>Very High</th>
<th>High</th>
<th>Marginal</th>
<th>Low</th>
<th>N/A</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
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<td>4</td>
<td>3</td>
<td>0</td>
<td>1.95</td>
</tr>
</tbody>
</table>

**Project Definition**: Was your project appropriate for a Capstone project?

<table>
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<tr>
<th>Rating</th>
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<th>High</th>
<th>Marginal</th>
<th>Low</th>
<th>N/A</th>
<th>Score</th>
</tr>
</thead>
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<td>15</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1.59</td>
</tr>
</tbody>
</table>
Schedule Conflicts: Did your team have many problems getting together for meetings among yourselves or with the mentor/sponsor? (What would you recommend to help deal with issues in this area?)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1</td>
<td>20</td>
<td>14</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Summary tabulation of the Project Sponsor Survey, Compiled May, 2011

<table>
<thead>
<tr>
<th>2011 Projects</th>
<th>Opinion of Capstone Program*</th>
<th>Willing to sponsor next year</th>
<th>Final Grade from Sponsor</th>
<th>Comments - mine</th>
<th>Comments - Sponsor/Mentor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agri ImaGIS</td>
<td>Good</td>
<td>For Sure</td>
<td>A+</td>
<td>MUCH better than last year</td>
<td>Excellent teamwork. We are glad that we worked with such a team.</td>
</tr>
<tr>
<td>Air Academy</td>
<td>Very Good</td>
<td>Likely</td>
<td>A+</td>
<td>This was an extension of the project that started last year - another great job for AA.</td>
<td>Good chance to gain experience with the real-world applications and working in an environment where requirements and needs may evolve a bit over time</td>
</tr>
<tr>
<td>ATC</td>
<td>Very Good</td>
<td>Likely</td>
<td>A</td>
<td>Another great project for ATC</td>
<td>We're two-for-two with capstone, both were positive experiences. Likely to sponsor next year - we'd have to identify a need, but we can usually do that.</td>
</tr>
<tr>
<td>BCBS ND</td>
<td>Very Good</td>
<td>NA</td>
<td>A-</td>
<td>Very good project this year</td>
<td>In a re-organization so need to see what happens by next spring to decide on another project.</td>
</tr>
<tr>
<td>Intelligent Insites</td>
<td>Very Good</td>
<td>For Sure</td>
<td>A</td>
<td>MUCH better than last year</td>
<td>Very smooth and well organized - Hands-on experience is essential for graduating students!</td>
</tr>
<tr>
<td>Company</td>
<td>Rating</td>
<td>Likelihood</td>
<td>Grade</td>
<td>Comments</td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>--------</td>
<td>------------</td>
<td>-------</td>
<td>--------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Microsoft</td>
<td>Very Good</td>
<td>Likely</td>
<td>B</td>
<td>Great to have MS back in our capstone program. It's very good to be back in the program. We learned some things that we will work to improve upon from our side for future sessions. It's a great experience for the students.</td>
<td></td>
</tr>
<tr>
<td>NDSU CS</td>
<td>Very Good</td>
<td>For Sure</td>
<td>A-</td>
<td>Internal project that went well. Met requirements, everyone contributed, everyone learned about LDAP, C# and interfaces.</td>
<td></td>
</tr>
<tr>
<td>NDSU PS</td>
<td>Very Good</td>
<td>For Sure</td>
<td>B</td>
<td>Sort of internal project - for Plant Science, turned out to be a bigger task than originally thought. Project was a bit much for them to handle in a single semester but the team did fine given the circumstances.</td>
<td></td>
</tr>
<tr>
<td>NISC</td>
<td>Very Good</td>
<td>For Sure</td>
<td>B</td>
<td>Team delivered what was required but had a couple bumps along the way. Generally quite good. I love working with NDSU on these projects. Would be willing to attempt an International project. Dean does a great job of working with and preparing the project teams. I feel the program provides valuable experiences for the students to gain knowledge of how software development works in the workplace.</td>
<td></td>
</tr>
<tr>
<td>Phoenix International</td>
<td>Good</td>
<td>Likely</td>
<td>A</td>
<td>Very good project this year. I appreciate the effort made to connect students with local employees and to offer them real-world experience. I firmly believe that programs such as this are invaluable both for students and the companies that participate. Best capstone project yet.</td>
<td></td>
</tr>
<tr>
<td>Polaris</td>
<td>Very Good</td>
<td>For Sure</td>
<td>A</td>
<td>Very good project again this year. Great program/thanks Dean. Thanks to Stephanie for her support.</td>
<td></td>
</tr>
</tbody>
</table>
In summary, responses from students and sponsors continue to improve each year.

| Students Program Value | | | | |
|------------------------|-----------------|-----------------|-----------------|
| Very Good Good Marginal Poor No Comment | | | |
| 2005 8 11 2 1 | | | |
| 2006 13 5 1 1 | | | |
| 2007 20 6 | | | |
| 2008 30 6 | | | |
| 2009 25 6 1 | | | |
| 2010 33 18 4 1 1 | | | |
| 2011 27 10 | | | |

<table>
<thead>
<tr>
<th>Sponsors Opinion of Capstone Program</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Good Good Marginal Poor No Comment</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2005 13 6 1 1 2</td>
<td></td>
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<td>2010 7 5</td>
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<tr>
<td>2011 11 2</td>
<td></td>
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</tbody>
</table>
## Advisees 2010 – 2011

The list below provides the student advisees for each faculty member. Non-tenured faculty are shielded from most undergraduate and graduate advising although they do take on some graduate student advising as they become more experienced.

With regard to graduate students, this list includes either the coursework advisor or the research advisor. The research advisor is listed only if the student has an approved Plan of Study.

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
<th>Academic Level</th>
<th>Major Description</th>
<th>Advisor Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agarwal</td>
<td>Palak</td>
<td>Senior</td>
<td>BS-Computer Science</td>
<td>Denton, Anne</td>
</tr>
<tr>
<td>Andersen</td>
<td>Zechariah</td>
<td>Junior</td>
<td>BS-Computer Science</td>
<td>Denton, Anne</td>
</tr>
<tr>
<td>Berstler</td>
<td>Christopher</td>
<td>Sophomore</td>
<td>BS-Computer Science</td>
<td>Denton, Anne</td>
</tr>
<tr>
<td>Bjornstad</td>
<td>Christopher</td>
<td>Sophomore</td>
<td>BS-Computer Science</td>
<td>Denton, Anne</td>
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<tr>
<td>Bliss</td>
<td>Spencer</td>
<td>Junior</td>
<td>BS-Computer Science</td>
<td>Denton, Anne</td>
</tr>
<tr>
<td>Brakvatne</td>
<td>Kristian</td>
<td>Sophomore</td>
<td>BS-Computer Science</td>
<td>Denton, Anne</td>
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<tr>
<td>Bugner</td>
<td>John</td>
<td>Senior</td>
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<td>Denton, Anne</td>
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<td>Dammeier</td>
<td>Joel</td>
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<tr>
<td>Douglas</td>
<td>Steven</td>
<td>Senior</td>
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<td>Ellingson</td>
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<td>Denton, Anne</td>
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<tr>
<td>Gerhardt</td>
<td>Sean</td>
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<td>BS-Computer Science</td>
<td>Denton, Anne</td>
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<tr>
<td>Al-Azzam</td>
<td>Omar</td>
<td>Graduate</td>
<td>PHD-Computer Science</td>
<td>Denton, Anne</td>
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<td>Al-Nimer</td>
<td>Loai</td>
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<tr>
<td>Chakraborty</td>
<td>Ushashi</td>
<td>Graduate</td>
<td>MS-Computer Science</td>
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<td>Chitraranjan</td>
<td>Charith</td>
<td>Graduate</td>
<td>MS-Computer Science</td>
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<tr>
<td>Ganesan</td>
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<td>Gupta</td>
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<td>Kar</td>
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<td>Denton, Anne</td>
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3 Curriculum and course development and changes:

Implementation of the Master of Software Engineering online degree program is well underway. Nine online courses have been completed and offered. The remaining three courses are being developed summer, 2011. The program presently has ten students. We expect the first graduate to complete in spring or summer, 2012. This is our only graduate program beyond a certificate that does not require a thesis or extensive paper. The Graduate Coordinator has begun to admit a small number of oncampus students who do not wish to pursue research into this program. We have decided to support completion of the MSE using any combination of distance and local courses.

The Department developed numerous changes to our B.S. in Computer Science degree program during 2009-10. These changes have been fully approved by the University and will be implemented starting fall, 2011. For the next three years, we will offer courses required for both the old version and the new version of this degree. Further, we have developed a correspondence matrix to support use of new courses in the old version of the degree and old courses in the new version of the degree.
The changes are:
Our charge was to develop modifications to our existing B.S. in Computer Science curriculum to address some concerns brought up frequently by potential employers and to bring the curriculum in line with satisfying the most recent ACM/IEEE curriculum guidelines. We were not to increase the number of hours required for the degree.
We believe we have satisfied our charge (and more) with the changes listed here.
1. Change the catalog descriptions for CSci 160 and 161 to
   - Clarify what each course is to accomplish
   - Add the prerequisite of an NDSU Mathematics or programming course to 160.

This is proposed because the 160 instructors believe that too many students take 160 who are unprepared to do well in the course. The Mathematics or programming course will provide some background in abstract reasoning. Exceptional students may request a waiver of this prerequisite.

2. Introduce a new course, CSci 213: Modern Software Tools with CSci 161 as a prerequisite. This course will provide students with experience doing requirements engineering, software design, test planning, implementation, and test plan execution with selected modern tools that cover configuration management, schedule tracking, bug tracking, symbolic debugging, and automatic unit testing. Students will work on the project individually to ensure that each student gains experience with each of the development activities. This course addresses a need cited often by the capstone project sponsors and mentors.

3. Introduce a new course, CSci 313: Software Development for Games with a prerequisite of CSci 213. This course will have students work in teams to implement a computer graphics display and an artificial intelligence-based computer opponent for a single human player. The course uses games because they combine substantial use of human-computer interfaces, computer graphics, and artificial intelligence (at least to the extent the ACM/IEEE 2008 update specifies these areas should be covered). The course will include introductions to the ACM/IEEE mandated coverage of these three topics. Student teams will continue to use the tools introduced in CSci 213.

The ACM/IEEE 2008 Update Book of Knowledge requires the following topic coverage that we have assigned to CSci 313:

   a. Human-Computer Interaction:
      i. Foundations (6 class hours)
      ii. Building GUI Interfaces (2 class hours)
   b. Graphics and Visual Computing:
      i. Fundamental techniques (2 class hours)
      ii. Graphic Systems (1 class hour)
   c. Intelligent Systems
      i. Fundamental issues (1 class hour)
      ii. Basic Search strategies (5 class hours)
      iii. Knowledge based reasoning (4 class hours)

These hours will require approximately one half of the course. The rest of the course will cover software development topics reviewing and going beyond those covered in CSci 213.

4. Introduce a new course, CSci 415: Parallel Computation with prerequisites of CSci 313 and 374. This course is also mandated by the ACM/IEEE update. The course surveys parallel computation across hardware, software, programming languages, algorithms, and application
areas. This course is copied verbatim from the ACM/IEEE update. It contains enough networks material to satisfy the ACM/IEEE requirement for networking coverage.

The ACM/IEEE Update mandates the following coverage of Net-centric Computing:

i. Introduction (2 class hours)
ii. Network communication (7 class hours)
iii. Network security (6 class hours)

5. Consolidate CSci 335 and 336 into a single course, CSci 336, which covers important automata theory and computability.

6. Consolidate CSci 366 and 468 into a single course, CSci 366, which covers database management systems.

7. Consolidate CSci 474 and 475 into a single course, CSci 474, which covers operating system concepts and implementation.

8. Drop CSci 373 as a degree requirement and move a couple of weeks of assembly language programming into CSci 374 (Electrical and Computer Engineering already does this with their version of 374). CSci 366 replaces CSci 373 as the prerequisite for CSci 374.


11. Make CSci 336 a prerequisite for CSci 467 to ensure that students do not leave 336 until their last semester.

12. Update several course descriptions to reflect what we are currently doing in those courses.

The Department also modified our B.A. in Computer Science degree program during 2009-10 and received full approval for this program to be offered starting fall, 2011. The changes were even more extensive than those for the B.S. degree. The changes give a web design and development focus to this degree. We hope to get more students to consider and complete this degree with the new focus. The old version has had less than ten active students with perhaps two or three graduates per year. We plan to grow the B.A. degree to twenty-five majors by 2014 with at least five graduating each year.

4. Accreditation and reviews:

The B.S. in Computer Science had been accredited since 1986, the first year that accreditation was available.

The Department was scheduled to undergo an onsite review of its B.S. accreditation by an ABET visiting team in fall, 2009. The Department could not spare the necessary funds in this period of budget cuts and the University was unwilling to assume the $8,000 obligation. Accordingly, we elected in late summer, 2009 not to undergo the reaccreditation evaluation. Our B.S. accreditation lapsed on July 1, 2010. The Department is undergoing a planned two year period of determining whether or not we will seek ABET accreditation in the future. This period includes surveys of graduates and prospective employers concerning their perception of the importance of ABET accreditation of Computer Science programs. When the two years are completed, we will decide whether or not to seek funds for a new accreditation visit. After the first year of this review, there appear to be almost no negative impacts from our decision to give
up our ABET accreditation. Neither students nor potential employers seem concerned that the program no longer is accredited by ABET.

5. Activities in student recruitment/retention, enrollment management, and other student activities:

The Department continued the two initiatives begun in 2005-06: introduction of a student honor society; and early selection of graduate teaching assistants as a recruiting tool. We expect to use the new focus of our B.A. degree on web design and development to help recruitment of interested students, starting in 2011-12.

At the undergraduate level the Department recognizes there is a retention problem. We have identified the problems as four-fold:

(1) Students are not always sufficiently motivated to master the knowledge and skills they must learn;
(2) By the end of their sophomore year, successful students have acquired skills and experiences which are sought by industry. Each year, several students leave to take well-paying industrial jobs;
(3) Our courses are not sufficiently coordinated with each other to provide students with needed repeated reinforcement of skills and practices introduced in earlier courses;
(4) The analytical material we introduce in several courses is not well-accepted or mastered by many of our students.

We continue to attempt solutions to these problems. The new B.S. curriculum we are introducing attempts to address some of these problems by replacing abstract, theoretical courses with more hands-on courses. The proposal includes a course on game development which should appeal to some students.

Our new half-time advisor, Joan Krush, is leading our expanded efforts in undergraduate student recruiting. We have prepared more visual recruiting materials. Joan has attended several conferences and meetings at which student recruitment from the upper midwest is done. She has initiated visits to area high schools.

Ms. Krush is leading our efforts to improve our student advising. She has helped to review all of our advising materials. Several improvements and clarifications to those documents and our Department web pages are being completed during summer, 2011.

Senior professors teaching freshman and transfer students:

Nearly all of the courses for CS majors, including those in the lower division, are taught by tenured or tenure-track professors, in accordance with ABET accreditation requirements. Entry level courses are regularly taught by senior professors.

Summer school activities:

The Department typically offers at least two graduate-level courses each summer, including at least one of the four graduate core courses. At least two courses for undergraduate majors are offered. Service courses, such as CSci 114 and 116 are offered also. The Department offers several courses each summer under the self-support program. The self-support program is very beneficial for the Department. Unfortunately, the minimum requirement for about twenty students in self support courses means that some of the
courses we would like to offer are not actually offered each year. Several distance education courses are presented as well.

*Career Center student employment*

CS Bachelor students employment rate is 94% at a salary range of Low-Average-High being 36-59-85K. We believe these figures significantly underestimate the real employment rate since many graduating students do not go through the Career Center to procure employment. Our own discussions with graduating students indicate an employment rate near 100% for students who immediately seek employment.

6. **Distance Education and use of Technology in Courses:**
The Department offers distance versions of CSci 114, 116., and 122 every semester and in the summer. Other service courses are offered via distance less frequently. Starting fall, 2006, we offered the Graduate Certificate in Software Engineering including four courses and a seminar through distance to students in India and elsewhere. The Master of Software Engineering program is available entirely through distance education. Introduction of new distance education courses is limited by the many time commitments already imposed upon faculty. Starting fall, 2011, we plan to advertise the Certificate and MSE programs regionally as well. Our efforts will be limited by our tight budget, however. Note that the incentives available presently for faculty to receive additional compensation by doing distance education courses are vital in achieving the level of distance education activity we had this year.

Every Computer Science course uses technology extensively. Courses use the Internet for delivery and many courses require extensive computer work. We are heavy users of Blackboard. Many courses use a variety of specialized computer software and network or grid computers.

7. **Assessment**

The Department followed our reorganized assessment procedures from 2008-09. This time, our reorganization was driven by a significant change in ABET accreditation requirements. For the first time, the ABET Computing Sciences Commission is requiring specific outcomes for the B.S. program. We replaced our existing outcomes with those required by ABET and reformulated our accreditation procedures to meet the new ABET requirements. Our University Assessment Report for 2009-10 was due January, 2011.

Service courses were assessed during 2010-11. Each course has a set of goals based on the General Education learning outcomes assigned to that course. We used formative assessment involving techniques described by Angelo and Cross in their book, Classroom Assessment Techniques, and cumulative assessment addressing the specific learning goals for each course.

We started to develop assessment procedures for our graduate courses during this academic year. The seven possible core courses (two unique to Computer Science programs, three unique to Software Engineering programs, and two common) were the focus during this year. We developed specific outcomes for each of those courses. Actual assessment began during 2010-11. Eventually, we expect to expand our graduate assessment to cover all regular graduate courses and seminars.
B. RESEARCH/CREATIVE ACTIVITY

1. Research and creative activities:

Almost all tenure track faculty regularly publish in high-quality media. Nearly all faculty submit at least one external, competitive grant proposal each year. This pattern continued in 2010-11.

The Department started a research enhancement program for junior faculty during 2005-06. This program continued in 2010-11. A program to encourage visits by more senior faculty from other institutions in research areas of interest to our junior faculty was begun in 2006-07. This program pays expenses and a small honorarium either for senior faculty to travel to NDSU to work intensively with our faculty for two weeks or for our faculty to travel to work intensively with senior faculty elsewhere for one or two weeks. Available funds have limited the use of this program to one or two instances per year.

Our long range goal for the next three to five years is to improve the visibility and prestige of the Department’s research programs regionally and nationally. We believe the somewhat low visibility of the Department outside our region (where we are widely imitated as a research and teaching leader) hurts our grant acquisition capability from federal funding agencies and from large corporations. However, the NSF did cite our program as being in the top-100 Computer Science programs during 2006-07 and subsequent years.

The Department has active research programs in data mining, software engineering, networks, virtual environments, computer systems, software security, and bioinformatics. These programs should continue to achieve more visibility within the profession.

2. Grants/Contracts/Research:

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<th>PRINCIPAL INVESTIGATOR</th>
<th>TITLE</th>
<th>FUNDING SOURCE</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-1-09 to 2-28-12</td>
<td>15445</td>
<td>Denton</td>
<td>Construction of High Resolution Physical Maps for Large Plant Genomes</td>
<td>NSF</td>
<td>35,521</td>
</tr>
<tr>
<td>9-09 to 8-11</td>
<td>14736</td>
<td>Do</td>
<td>NSF – II-New Infrastructure for model-based security testing</td>
<td>NSF</td>
<td>220,000</td>
</tr>
<tr>
<td>5-10 to 8-11</td>
<td>17213</td>
<td>Do</td>
<td>II-New Infrastructure for model-based security testing</td>
<td>NSF</td>
<td>16,000</td>
</tr>
<tr>
<td>8-09 to 7-10</td>
<td>15352</td>
<td>Kong</td>
<td>Graphical Interface Interpretation Using Graph Grammars</td>
<td>Hewlett Packard</td>
<td>40,000</td>
</tr>
<tr>
<td>7-09 to 7-10</td>
<td>15845</td>
<td>Kong</td>
<td>Epscor State Seed Grant</td>
<td>NDSU</td>
<td>38,800</td>
</tr>
<tr>
<td>7-09</td>
<td>18703</td>
<td>Magel</td>
<td>Faculty Course Development for an on-line MSE</td>
<td></td>
<td>25,000</td>
</tr>
<tr>
<td>1/09 to 7/31/11</td>
<td>18139</td>
<td>Nygard</td>
<td>Military Logistics</td>
<td>Upper Great</td>
<td>15,000</td>
</tr>
<tr>
<td>YEAR</td>
<td>GRANT #</td>
<td>PRINCIPAL INVESTIGATOR</td>
<td>TITLE</td>
<td>FUNDING SOURCE</td>
<td>AMOUNT</td>
</tr>
<tr>
<td>------------</td>
<td>---------</td>
<td>------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>----------------------</td>
<td>----------</td>
</tr>
<tr>
<td>9-09 to 7-11</td>
<td>16447</td>
<td>Nygard</td>
<td>Designing Robust &amp; Secure Heterogeneous Sensor Networks</td>
<td>Plains</td>
<td>124,544</td>
</tr>
<tr>
<td>1-10 to 8-10</td>
<td>16597</td>
<td>Nygard/Agarwal</td>
<td>Intelligent Insites Inc award to Abhishek Agarwal</td>
<td>Intelligent InSites</td>
<td>5,012</td>
</tr>
<tr>
<td>8-09 to 9-10</td>
<td>14560</td>
<td>Nygard</td>
<td>Zhejiang Economic and Trade Polytechnic Instructional Workshop</td>
<td>Zhejiang Economic and Trade Polytechnic</td>
<td>11,000</td>
</tr>
<tr>
<td>7-15-08 to 7-14-11</td>
<td>13097</td>
<td>Nygard/Du</td>
<td>Designing Robust &amp; Secure Heterogeneous Sensor Networks</td>
<td>U.S. Army</td>
<td>358,748</td>
</tr>
<tr>
<td>7-09 to 7-10</td>
<td>15846</td>
<td>Zhang</td>
<td>Epscor State Seed Grant</td>
<td>NDSU</td>
<td>41,300</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$930,925</td>
</tr>
</tbody>
</table>

**COMPUTER SCIENCE DEPARTMENT GRANTS AND CONTRACTS PROJECTS INITIATED DURING THE JULY 1, 2010 TO JUNE 30, 2011 TIME PERIOD**

<table>
<thead>
<tr>
<th>YEAR</th>
<th>GRANT #</th>
<th>PRINCIPAL INVESTIGATOR</th>
<th>TITLE</th>
<th>FUNDING SOURCE</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-1-10 to 7-31-11</td>
<td>18079</td>
<td>Denton</td>
<td>NDSU Computer Science Industry Consortium Program (ICP)</td>
<td>Phoenix International</td>
<td>15,000</td>
</tr>
<tr>
<td>8-1-10 to 7-31-11</td>
<td>18082</td>
<td>Denton</td>
<td>NDSU Computer Science Industry Consortium Program (ICP)</td>
<td>AgriImaGIS Technologies</td>
<td>15,000</td>
</tr>
<tr>
<td>7-1-11 to 6-30-14</td>
<td>17967</td>
<td>Denton</td>
<td>Data Driven Support for the Smart Farm</td>
<td>NSF</td>
<td>254,499</td>
</tr>
<tr>
<td>9-1-10 to 8-31-11</td>
<td>17350</td>
<td>Do</td>
<td>EAGER – Adaptive Regression Testing (ART)</td>
<td>NSF</td>
<td>50,000</td>
</tr>
<tr>
<td>7/11 to 8/12</td>
<td>18674</td>
<td>Helsene</td>
<td>Desktop virtualization pilot project</td>
<td>NDSU Tech Fee</td>
<td>66,847</td>
</tr>
<tr>
<td>8-1-10 to 7-31-11</td>
<td>17553</td>
<td>Jin</td>
<td>Epscor Seed Award</td>
<td>NSF/Epscor</td>
<td>41,470</td>
</tr>
<tr>
<td>4/1/11 to 4/1/13</td>
<td>18752</td>
<td>Knudson</td>
<td>Data Driven Support for the Smart Farm</td>
<td>NIH/WoWi We Instruction CO</td>
<td>369,276</td>
</tr>
<tr>
<td>7-1-11 to 6-30-14</td>
<td>18641</td>
<td>Kong</td>
<td>Designing Reliable Software with Graphical Notations</td>
<td>NASA/UND</td>
<td>11,436</td>
</tr>
<tr>
<td>4-16-11 to 4-15-12</td>
<td>17801</td>
<td>Ludwig</td>
<td>State Epscor Faculty Startup Award</td>
<td>Epscor</td>
<td>16,500</td>
</tr>
<tr>
<td>8-16-10 to 6-30-11</td>
<td>17801</td>
<td>Ludwig</td>
<td>State Epscor Faculty Startup Award</td>
<td>Epscor</td>
<td>16,500</td>
</tr>
<tr>
<td>YEAR</td>
<td>Grant #</td>
<td>Principal Investigator</td>
<td>Title</td>
<td>Funding Source</td>
<td>Amount</td>
</tr>
<tr>
<td>--------------</td>
<td>---------</td>
<td>------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>-------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>8-10 to 5-11</td>
<td>14560</td>
<td>Nygard</td>
<td>Zhejiang Economic and Trade Polytechnic Instructional Workshop</td>
<td>Zhejiang Economic and Trade Polytechnic</td>
<td>5,106</td>
</tr>
<tr>
<td>8-16-10 to 5-15-12</td>
<td>17887</td>
<td>Nygard</td>
<td>MPC Award – Year 4 – Education Program – Instructional Support</td>
<td>US Dept. of Transportation</td>
<td>5,000</td>
</tr>
<tr>
<td>1-22-10 to 8-31-11</td>
<td>17407</td>
<td>Nygard/Du</td>
<td>CRI – A Heterogeneous Sensor Network Laboratory</td>
<td>Temple University and NSF</td>
<td>44,185</td>
</tr>
<tr>
<td>8-1-10 to 7-31-11</td>
<td>18080</td>
<td>Salem</td>
<td>NDSU Computer Science Industry Consortium Program (ICP)</td>
<td>American Crystal Sugar</td>
<td>15,000</td>
</tr>
<tr>
<td>8-1-10 to 7-31-11</td>
<td>18083</td>
<td>Salem</td>
<td>NDSU Computer Science Industry Consortium Program (ICP)</td>
<td>RDO Equipment Company</td>
<td>15,000</td>
</tr>
<tr>
<td>7-1-11 to 6-30-14</td>
<td>18751</td>
<td>Salem</td>
<td>Data Driven Support for the Smart Farm</td>
<td>NSF</td>
<td>108,014</td>
</tr>
<tr>
<td>4-10 to 4-11</td>
<td>16884</td>
<td>Slator/Nygard BouGhosn</td>
<td>Graduate Student Research Award (Steve BouGhosn)</td>
<td>US Dept of Energy</td>
<td>15,315</td>
</tr>
<tr>
<td>8-1610 to 8-15-11</td>
<td>17559</td>
<td>Slator/Nygard McCulloch</td>
<td>Epscor Graduate Student Research Award (McCulloch)</td>
<td>NSF/Epscor</td>
<td>27,685</td>
</tr>
<tr>
<td>8-1-10 to 7-31-11</td>
<td>17488</td>
<td>Zhang</td>
<td>Epscor Seed Award</td>
<td>NSF/Epscor</td>
<td>42,900</td>
</tr>
<tr>
<td>5-1-11 to 4-30-12</td>
<td>17762</td>
<td>Zhang</td>
<td>Student Travel Support for IEEE INFOCOM 2011 to Shanghai China</td>
<td>NSF</td>
<td>25,000</td>
</tr>
<tr>
<td>9-1-10 to 8-31-12</td>
<td>16614</td>
<td>Zhang/Du</td>
<td>MRI – Development of Hybrid Wireless Network</td>
<td>Temple University and NSF</td>
<td>109,426</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>$1,277,587</strong></td>
</tr>
</tbody>
</table>

**Fall 2010 / Spring 2011 Graduate Research Assistants**

- Daniel Aceintuna
- Sarthak Ahuja
- Omar Al-Azzam
- Iyad Alazzam
- Loai Al-Nemer
- Ibrahim Al Jarah
- Nailah Al-Madi
- Ramakanth Annadi
- Mohammed Akour
- Junaid Arafeen
- Shadi Bani Taan
- Rami Alroobi
- Shi Bai
- Debarshi Barat
- Steve BouGhosn
- James Brewer
- Min Chen
- Wen Cheng
- Charith Chitranjan
- Anubrata Dutta
Mohammad Hossain
Jyotjeev Kohli
Qingrui Li
Chao Liu
Yang Liu
Mahesh Mahabaleshwar
Aaron Marback
Ryan McCulloch
Ya Zhu

Fall 2010 / Spring 2011 Undergraduate Research Assistants

Zechariah Andersen
Rafiki Assumani
Benjamin Bechtold
Spencer Bliss
John Bugner
Lucas Bremseth
Joseph Ching
Raashi Chugh
Austin Dicken
Nathan Ehresmann
Sean Gerhardt
Abram Haich

Gunnar Johnson
Andrew Jones
Huheun Lee
Josiah Lenthe
Davin Loegering
Cesar Ramirez
Robert Saxton
Jonathan Scislow
Ramesh Singh
Craig Stenger
John Utke

3. Faculty Articles/Books/Publications/Presentation and Course Instruction:

Sameer Abufardeh

Research

- 2009 Calendar Year
  - Refereed Publications

- 2010 Calendar Year
  - Refereed Publications

ii. Pending Publications


[2] (With Shadi Banitaan, Saeed Salem, Wei Jin, Ibrahim Aljarah). *(2010)" Comprehensive Study on Entity Discovery using Classification Techniques and their Application to Opinion Mining." (Submitted to ACM Transactions on Intelligent Systems and Technology (ACM TIST)."Special Issue: Search and Mining User Generated Contents").

• 2011 Calendar Year - In progress


• Teaching

- Spring, 2009

<table>
<thead>
<tr>
<th>Course #</th>
<th>Credit Hours</th>
<th># of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 161 Sec I</td>
<td>4</td>
<td>±40</td>
</tr>
<tr>
<td>CSCI 161 Sec II</td>
<td>4</td>
<td>±35</td>
</tr>
</tbody>
</table>

- Fall, 2009

<table>
<thead>
<tr>
<th>Course #</th>
<th>Credit</th>
<th># of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 161 Sec I</td>
<td>4</td>
<td>±40</td>
</tr>
<tr>
<td>CSCI 161 Sec II</td>
<td>4</td>
<td>±33</td>
</tr>
</tbody>
</table>

- Spring, 2010

<table>
<thead>
<tr>
<th>Course #</th>
<th>Credit Hours</th>
<th># of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 161 Sec I</td>
<td>4</td>
<td>±40</td>
</tr>
<tr>
<td>CSCI 161 Sec II</td>
<td>4</td>
<td>±30</td>
</tr>
</tbody>
</table>
Fall, 2010

<table>
<thead>
<tr>
<th>Course #</th>
<th>C</th>
<th># of students</th>
<th>Prep.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 161 Sec I</td>
<td>4</td>
<td>±37</td>
<td></td>
</tr>
<tr>
<td>CSCI 161 Sec II</td>
<td>4</td>
<td>±17</td>
<td></td>
</tr>
<tr>
<td>CSCI 373</td>
<td>Covered 7 weeks for Dr. Simon</td>
<td>New</td>
<td></td>
</tr>
<tr>
<td>CSCI 372 Sec I &amp; 2</td>
<td>Covered 2 weeks for Dr. Wei Jin</td>
<td>New</td>
<td></td>
</tr>
</tbody>
</table>

Service

- **2009**
  - **Vice President** for Honor Society for NDSU Chapter - Upsilon Pi Epsilon (UPE) (2008-present)
  - **Member** of the Computer Science Dept. curriculum review committee member (2009-present).
  - **Monthly** Department Meetings.
  - **Reviewer:** International Conference on New Trends in Information Science and Service Science (NISS).
  - **Meeting** with prospective students/parents

Anne Denton

Research

- **2009 Calendar Year**
  - **I. Refereed Publications**
    


Jianfei Wu, Anne M. Denton, Omar El-Ariss, and Dianxiang Xu, "Mining core patterns in stock market data," Mining Multiple Information Sources Workshop in conj. with the 2009 IEEE Int'l Conf. on Data Mining, Miami, Dec. 6, 2009.

ii. Presentations
Mining Multiple Information Sources Workshop in conjunction with the 2009 IEEE International Conference on Data Mining, Miami, Dec 6, 2009.
Presentation: See paper above

iii. Funded Research Proposals (title, PI and co-pi’s, duration, amount, source)
TRPGR- Transformative research on the construction of high-resolution physical maps for large plant genomes
PI: Shahryar Kianian, Co-PIs: Anne Denton, Yong Qiang Gu, Ming-Cheng Gu, and Oscare Riera-Lizarazu
Funding Source: NSF-DBI
Amount: $ 952,211
Award Period: 03/01/2009 – 03/01/2010

Pattern discovery in high-throughput biofilm data
PIs: Anne Denton and Birgit Prüß
Funding Source: NDSU CSM/AES Small Grant Program
Amount: $6,200
Award period: 10/01/2008 – 9/15/2009

iv. Graduate Students completing for whom you were the advisor
(name, degree, title of paper, date)
Szymon Woznica (M.S., N-gram-based search procedure, Jun. 2009)

v. Graduate Student Committees on which you serve (indicate those for which you are Chair)
Harsh Jain (passed Software Engineering M.S. paper defense Jan. 2009)
Daniel Aceituna (passed Software Engineering M.S. paper defense Feb. 2009)
Hui Zhao (passed Statistics M.S. paper defense Apr. 2009)
Monica Michalak (passed Genomics Ph.D. preliminary exam Jan. 2007, passed Ph.D. defense June 2009)

vi. Unfunded Research Proposals
Identification of specific nutrients and chemical properties that inhibit or support Escherichia Coli biofilm formation
PI: Birgit Pruess, Co-PI Anne Denton
Funding Source: NSF-MCB
Amount: $574,423
Award Period: 03/01/11 – 02/28/14
Time Per Year Committed: 1 month

IGERT Thinkers for Tomorrow's Problems in Food Logistics and Security
PI: Charlene Wolf-Hall (Anne Denton among Participants)
Funding Source: NSF-IGERT (Preproposal)

Software and Computational Science Village
PI: Ken Nygard, Co-PIs Anne Denton, Brian Slator, William Perrizo, Kenneth Magel
Funding Source: NSF-SMP
Amount: $700,000
Award Period: 07/16/10 – 07/15/13
Time Per Year Committed: 0.5 month

- 2010 Calendar Year
  i. Refereed Publications


  Al-Azzam, Jianfei Wu, Loai Al-Nimer, Charith Chitraranjan, Anne Denton, "A weighted density-based approach for identifying standardized items that are significantly related to the biological literature," Text Mining Workshop in conjunction with the Eleventh SIAM International Conference on Data Mining, Mesa AZ, 30 April 2011.


  ii. Presentations
  Workshops in conjunction with 2010 ACM SIGKDD Conference on Knowledge Discovery and Data Mining
  - Poster in BioKDD Workshop: See paper above
  - Presentation in Useful Patterns Workshop: See paper above

  iii. Funded Research Proposals (title, source, PI and co-PIs, duration, amount)
  NDSU Computer Science Industry Consortium (ICP): Yield Extraction
  PI: Anne Denton
  Funding Source: John Deere
Amount: $15,000
Award Period: 09/01/2010 – 08/30/2011
Time Per Year Committed: 0.5 months

NDSU Computer Science Industry Consortium Program (ICP): Agricultural Image Analysis
PI: Anne Denton
Funding Source: Agri ImaGIS Technologies
Amount: $15,000
Award Period: 09/01/2010 – 08/30/2011
Time Per Year Committed: 0.25 months

TRPGR- Transformative research on the construction of high-resolution physical maps for large plant genomes
PI: Shahryar Kianian, Co-PIs: Anne Denton, Yong Qiang Gu, Ming-Cheng Gu, and Oscare Riera-Lizarazu
Funding Source: NSF-DBI
Amount: $952,211
Award Period: 03/01/2009 – 03/01/2010

iv. Graduate Students completing for whom you were the advisor (name, degree, title of paper, date)
Golam Osmani (M.S., “A data visualization tool to identify patterns formed by subsets of data”, Apr. 2010)

v. Graduate student Committees on which you serve (indicate those for which you are Chair)
Christopher Besemann (Ph.D., ongoing, chair of committee)
Jianfei Wu (Ph.D., ongoing, chair of committee)
Omar Al-Azzam (Ph.D., ongoing, chair of committee)
Loai Alnemer (Ph.D., ongoing, chair of committee)
Angshu Kar (M.S., ongoing, chair of committee)
Mohamed Rahman (M.S. ongoing, chair of committee)
Guy Hokanson (passed Computer Science M.S. paper defense Nov. 2010)
Preeti Sule (Ph.D. student in Microbiology, preliminary exam Mar. 2010)
Rinku Dutta (Ph.D. student in Pharmaceutical Sciences, passed preliminary examination May 2010)
Filippo Bassi (Ph.D. student in Genomics, Plan of Studies signed Jun. 2010)

vi. Pending Publications
Christopher A. Besemann and Anne M. Denton, "A Log-Linear Approach to Mining Significant Graph-Relational Patterns" under consideration by Data and Knowledge Engineering (Minor Revision requested)
vii. Unfunded Research Proposals
TOGETHER: Team Oriented Genetics Enhancement THrough Education and Research
PI: Shahryar Kianian, Co-PIs: Anne Denton, Lisa Montplaisir, Erika Offerdahl, and R Craig Schnell
Funding Source: NSF-DGE
Amount: $2,998,686
Award Period: 01/01/2010 – 01/01/2015

CDI-Type I: Significant Patterns in Diverse Microbiological Data
PI: Anne Denton, Co-PI: Birgit Pruess
Funding Source: NSF-CDI
Amount: $399,959
Award Period: 12/01/2009 – 12/01/2012

Environmental control of Escherichia coli biofilm formation
PI: Birgit Pruess, Co-PI: Anne Denton
Funding Source: NSF-MCB Genes and Genome Systems
Amount: $483,310
Award Period: 01/01/10 – 12/31/12

III: Small: Data mining of diverse data using vector attributes
PI: Anne Denton, Co-PIs: Birgit Pruess and Dean Webster
Funding Source: NSF-IIS
Amount: $496,685
Award Period: 07/01/09 – 06/30/2012

viii. Teaching
a. Spring, 2009 (for each course give number, title, credits, number of students and indicate if it was a new preparation for you)
   CSci 372 Comparative Programming Languages 3 cr 36 students
   CSci/Math/Stat 732 Introduction to Bioinformatics 3 cr 21 students

b. Fall, 2009 (same information)
   CSci 790 Seminar: Data Mining in Science 1 cr 12 students
   CSci 366 Files for Database Systems 3 cr 59 students

c. Spring, 2010 (same information)
   CSci 790 Seminar: Data Mining in Science 1 cr 7 students
   CSci 732 Introduction to Bioinformatics 3 cr 18 students
   CSci 372 Comparative Programming Languages 3 cr 15 students
   CSci 372 Comparative Programming Languages 3 cr 34 students

d. Fall, 2010 (same information)
   CSci 366 Files for Database Systems 3 cr 65 students
   CSci 335 Theoretical Computer Science 3 cr 48 students
   new prep.
ix. Service
  e. 2009
    i. For the profession (refereeing, reviewing, service on Conference Committees or journal editorships) (give activity, dates of involvement)

(For journal review see 2010)


Technical Committee of the Thirteenth Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD-09), Bangkok, Thailand, April 27-30, 2009.

Program committee member for the 2009 ACM Symposium on Applied Computing, Waikiki Beach, Honolulu, HI, March 8 - 12, 2009.

Panelist for ND-EPSCOR Doctoral Dissertation Assistantship - NDSU 2009

ii. For the University (give activity, dates of involvement, and whether or not you held an office)

University Library Committee 2006 – 2009
(see ongoing committees under 2010)

iii. For the Department (same information)

Faculty Search Committee 2008/2009
(see ongoing committee under 2010)

a. 2010 (same information in the same categories)

    i. For the profession (refereeing, reviewing, service on Conference Committees or journal editorships) (give activity, dates of involvement)

Panelist on NSF-IIS panel 2010

Review for the following journals:
IEEE Transactions on Knowledge and Data Engineering
Knowledge and Information Systems (KAIS), Springer
Data & Knowledge Engineering, Elsevier
BMC Bioinformatics

Program committee member for the 2010 IEEE International Conference on Data Mining, ICDM-10, Sydney, Australia, Dec. 14-17, 2010.
Technical Committee of the Fourteenth Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD-10), Hyderabad, India, June 21-24, 2010.

Technical committee member for the IEEE 2010 International Joint Conference on Neural Networks (IJCNN 2010), Barcelona, July 18-23, 2010.

Serving as an Editorial Board member of the Open Source journal entitled “Source Code for Biology and Medicine (SCBM),” which is part of BioMed Central (www.biomedcentral.com) as one of its independent journals. (since 2006)

ii. For the University (give activity, dates of involvement, and whether or not you held an office)

Chair of RCATT Listening Group II (2010)
Search Committee for Director of CCAST (2010)
Academic Affairs Committee (since 2009)
Steering Committee for interdisciplinary Genomics Program (since 2005)
Tech Fee Advisory Committee (since 2006)
Awards Committee (2006 – 2010)

iii. For the College (same information)

Ad hoc member of College Curriculum Committee (since 2009)

iv. For the Department (same information)

Departmental Curriculum Committee (since 2010)
Course Fee Committee (since 2009)

Hyunsook Do

Research

• 2009 Calendar Year
  i. Refereed Publications
  ii. Other Publications
  iii. Presentations
   (1) ICST10, The Effectiveness of Regression Testing Techniques in Reducing the Occurrence of Residual Defects, April 2010, Paris, France.
iv. Funded Research Proposals (title, PI and co-PI's, duration, amount, source)

v. Graduate Students completing for whom you were the advisor (name, degree, title of paper, date)
   (1) D. Aceituna, Validating requirements models using SQ querying, MS, 2/19/2009.

vi. Graduate Student Committees on which you serve (indicate those for which you are Chair)

vii. Pending Publications

viii. Unfunded Research Proposals

• 2010 Calendar Year
  i. Refereed Publications
     (5) P. Nagahawatte and H. Do, The Effectiveness of Regression Testing Techniques in Reducing the Occurrence of Residual Defects, ICST, April, 2010.

  ii. Other Publications

  iii. Presentations

  iv. Funded Research Proposals (title, source, PI and co-PIs, duration, amount)
     (1) NSF, CRI, REU supplement, II-NEW: Infrastructure for model-based security testing, controlled experiments, and education, PI, $16,000, 9/1/2010 – 8/31/2011.
v. Graduate Students completing for whom you were the advisor (name, degree, title of paper, date)
   (1) R. Carlson, A clustering approach to improving test case prioritization: An industrial case study, MS, 10/27/2010.

vi. Graduate student Committees on which you serve (indicate those for which you are Chair)
   (2) M. Bhogadi, Teaching Encryption: A learning theory approach, MS, 10/29/2010.

vii. Pending Publications

viii. Unfunded Research Proposals

- Other Research Activities

- **Teaching**
  - Spring, 2009 (for each course give number, title, credits, number of students and indicate if it was a new preparation for you)
    - CSci345, Practical Approaches to Software Testing, 3 credits, 3 students, new preparation
  - Fall, 2009
    - CSci715, Software Requirements Definition and Analysis, 3 credits, 10 students
    - CSci413, Principles of Software Engineering, 3 credits, 3 students, new preparation
  - Spring, 2010
    - CSci714, Software Project Planning and Estimation, 3 credits, 6 students, new preparation
  - Fall, 2010
    - CSci715, Software Requirements Definition and Analysis, 3 credits, 17 students
    - CSci413, Principles of Software Engineering, 3 credits, 18 students

- **Service**
  - 2009
    - i. For the profession (refereeing, reviewing, service on Conference Committees or journal editorships) (give activity, dates of involvement)
      - The conference program committee (TAICPART 2009); journal reviewer (ACM Transactions on Software Engineering and Methodology; IEEE Transactions on Software Engineering; Journal of Software Testing, Verification and Reliability; Information and Software Technology; Computers and Security)
    - ii. For the University (give activity, dates of involvement, and whether or not you held an office)
      - An advisor for the Bison Herald student organization at NDSU: this service involved several meetings with students to discuss their activities
(e.g. festivals and Korean language/culture class) and problems (e.g., funding) they faced.

iii. **For the Department**
- Faculty hiring committee: this service involved application reviews, phone meetings with candidates in a short list, and several hiring committee meetings; Free semester plan committee: this service involved several meetings and writing a draft of the plan; Technical report coordinator.

- 2010

i. **For the profession (refereeing, reviewing, service on Conference Committees or journal editorships) (give activity, dates of involvement)**

ii. **For the University (give activity, dates of involvement, and whether or not you held an office)**
- An advisor for the Bison Herald student organization at NDSU: This service involved several meetings with students to discuss their activities (e.g. festivals and Korean language/culture class) and problems (e.g., funding) they faced.

iii. **For the Department**
- Free semester plan committee; Technical report coordinator.

**Wei Jin**

- Research
  - **2009 Calendar Year**
    i. **Refereed Publications**


ii. Presentations


iii. Graduate Student Committees on which you serve (indicate those for which you are Chair)

Swathi kondakindi
Mousumi Tanha
Sandeep Poreddy
Praveen Emmadi (completed)
Mridula Sarker
Yaswanth Potla (completed)
Pavan Bapanpally
Swapna Phadke (chair)
Shadi Banitaan

iv. Unfunded Research Proposals

2009 NIH Challenge Grants in Health and Science Research: A secure and convenient genome information management system (*co-PI*, collaborated with Department of Health Sciences, University of Pittsburgh, $178,864)

2009 NSF Information and Intelligent Systems (IIS): Core Programs: DOMAIN DRIVEN ASSOCIATION DISCOVERY AND SCENARIO DETECTION FROM LARGE-SCALE HETEROGENEOUS DATA (*PI*, $451,180)


• 2010 Calendar Year

i. Refereed Publications


Abhishek Singh, Lucy Vanderwende and Wei Jin. “Ranking Summaries for Content and Coherence without Reference Summaries”, in the Pacific Northwest Regional Natural Language Processing Workshop (NW-NLP 2010), Microsoft Research Redmond, Redmond, WA 98052, April 23, 2010 (Poster).


ii. Presentations

“A Formal Study of Classification Techniques on Entity Discovery and their Application to Opinion Mining”, ND EPSCoR 2010 State Conference, Grand Forks, Fargo, ND, September 2010. (poster presentation by Shadi Banitaan)

"HCAMiner: Mining Concept Associations for Knowledge Discovery through Concept Chain Queries", in the 23rd International Conference on Computational Linguistics (COLING 2010), Beijing, China, August, 2010.

iii. Funded Research Proposals (title, source, PI and co-PIs, duration, amount)

iv. Graduate student Committees on which you serve (indicate those for which you are Chair)
Swathi kondakindi (completed)
Mousumi Tanha (completed)
v. Pending Publications


vi. Unfunded Research Proposals

2010 NDSU Advance FORWARD Leap Grant: "DOMAIN DRIVEN ASSOCIATION DISCOVERY AND SCENARIO DETECTION FROM LARGE-SCALE HETEROGENEOUS DATA (PI; $29,981).

vii. Pending Research Proposals


• Teaching
  • Spring, 2009 (for each course give number, title, credits, number of students and indicate if it was a new preparation for you)

CSCI 345 Topics in Personal Computers//Information Retrieval and Web Search; 3 credits; 11 students; new preparation

CSCI 783 Topic in Software System/Information Retrieval and Web Search; 3 credits; 8 students; new preparation

  • Fall, 2009 (same information)
CSCI 372 Comparative Languages; 3 credits; Section 1, 46 students
CSCI 372 Comparative Languages; 3 credits; Section 2, 34 students

- Spring, 2010 (same information)

CSCI 426 Introduction to Artificial Intelligence; 3 credits; 26 students; new preparation
(Undergraduate Level)

CSCI 626 Introduction to Artificial Intelligence; 3 credits; 2 students; new preparation (Graduate Level)

- Fall, 2010 (same information)

CSCI 372 Comparative Languages; 3 credits; Section 1, 41 students
CSCI 372 Comparative Languages; 3 credits; Section 2, 30 students

- Service
  - 2009
    i. For the profession (refereeing, reviewing, service on Conference Committees or journal editorships) (give activity, dates of involvement)

NSF Review panel: CDI (Cyber-enabled Discovery and Innovation) program, Arlington, Virginia, February, 2009

ii. For the College (same information)
  Junior Faculty Series: the 2nd year faculty development series

iii. For the Department (same information)

Department of Computer Science Faculty Recruiting Committee (Spring 2009, Fall 2009)

- 2010 (same information in the same categories)

  i. For the profession (refereeing, reviewing, service on Conference Committees or journal editorships) (give activity, dates of involvement)

Program Committee Member:

CIKM 2010 - The 19th International Conference on Information and Knowledge Management


IWGD 2010 - International Workshop on Graph Database, in Conjunction with the 11th International Conference on Web-Age Information Management
Journal Reviewer:

**DKE** - Data & Knowledge Engineering (Mar. 2010)

**JWS** - Journal of Web Semantics (Feb. 2010)

IEEE Intelligent Systems (Dec. 2010)

ii. **For the College (same information)**

Junior Faculty Series: the 2nd year faculty development series

iii. **For the Department (same information)**

Department of Computer Science Faculty Recruiting Committee (Spring 2010)

**Tariq King**

**Research**

- **2009 Calendar Year**

i. **Refereed Publications**


ii. Presentations

1. Autonomic Self-Testing of the Cloud, In the Cloud, the 2nd CS University-Industry Consortium Outreach Meeting: IBM, April 21, 2010, Department of Computer Science, NDSU, Fargo ND


iii. Unfunded Research Proposals


iv. Other Research Activities

1. Founded the Software Testing Research Group, http://cs.ndsu.edu/strg Currently consists of (6) graduate students, i.e., four (4) PhD students and two (2) MS students.

2. Coordinating four (4) research projects of the STRG in the following areas: Software Testing in the Cloud; Change Propagating Test Models for Adaptive Systems; Environment-Based Testing of Adaptive Software; and Testing Enterprise Resource Planning Systems.

3. Performing experiments to evaluate system-wide autonomic self-testing using the Communication Virtual Machine (CVM), http://www.cis.fiu.edu/cml

4. Collaborating with Dr. Gursimran Walia on two (2) research projects: estimating defect size in source code using capture/recapture techniques, and performing systematic reviews on testing autonomic and adaptive systems.

5. Held individual meetings with the following colleagues to discuss research collaboration possibilities:

   o Dr. Jun Kong – UML graph transformations to support self-testing

   o Dr. Hyunsook Do – evaluating model-driven scenario query with CVM

   o Dr. Weiyi Zhang – runtime test optimization based on network configuration and performance.
b. 2010 Calendar Year

i. Refereed Publications


ii. Pending Publications


iii. Presentations

1. Enhancing the Web-Based Repository of Software Testing Tools, 2nd Workshop on Integrating Software Testing into Programming Courses (WISTPC 2010), June 24, 2010, Miami, FL.

iv. Pending Proposals

1. Donald P. Schwert and Tariq M. King (Co-PI), *SBIR Phase II: An Environmental Geology Game for Discovery-Oriented Science and Mathematics Education*, Agency: NSF. Program: SBIR. Amount Requested: $180K for two (2) years. Subcontract from the WoWiWe Instruction Co.

2. Donald P. Schwert and Tariq M. King (Co-PI), *SBIR Phase II: A Multi-User Virtual Biology Environment for Discovery-Oriented Science Education*, Agency: NIH.
Program: SBIR. Amount Requested: $368K for two (2) years. Subcontract from the WoWiWe Instruction Co.

v. Unfunded Research Proposals


vi. Other Research Activities

1. Directing the activities of the Software Testing Research Group (STRG), http://cs.ndsu.edu/strg. Currently consists of (9) graduate students, i.e., five (5) PhD students, and two (4) MS students. STRG published 2 research papers (1 workshop, 1 conference), with one more publication currently under review and three others under preparation. Ongoing projects include:
   - Formulating a workflow for providing test support as a service for cloud computing architectures, Annaji Ganti (PhD student)
   - Evaluating the Test Information Propagation approach for synchronizing adaptation and testing models at runtime. Mohammed Akour (PhD student), and Akanksha Jaidev (MS student).
   - Testing Adaptive Learning Systems, Richard Rummelt (PhD student)
   - Defining a formal modeling and test-driven development approach to building Enterprise Resource Planning systems. Talukdar Asgar (PhD student), Iyad Alazzam (PhD student), and Debajyoti Dash (MS student)
   - Dynamically scheduling regression tests in autonomic software. Asha Yadav (MS Student), and Arti Katiyar (MS student).

2. Collaborating with researchers at Colorado State University, Universidade Federal de Goias (Brasil), and Florida International University on modeling and realizing of user-centric communication services with the Communication Virtual Machine (CVM) platform, http://cvm.cis.fiu.edu.

• Teaching

  • 2009 Calendar Year

i. Courses Taught
<table>
<thead>
<tr>
<th>Course #</th>
<th># of Students</th>
<th>Instructor Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSci 718</td>
<td>9</td>
<td>4.89</td>
</tr>
<tr>
<td>CSci 718</td>
<td>25</td>
<td>4.75</td>
</tr>
</tbody>
</table>

ii. **Major Professor (4 PhD, 1 MS Student)**

1. Annaji Ganti, PhD
2. Mohammed Akour, PhD
3. Talukdar Asgar, PhD
4. Iyad Alazzam, PhD
5. Akanksha Jaidev, MS

iii. **Graduate Student Committees (Completed)**


- **2010 Calendar Year**

i. **Courses Taught**

<table>
<thead>
<tr>
<th>Course #</th>
<th># of Students</th>
<th>Instructor Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSci 745</td>
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<tr>
<td>CSci 790</td>
<td>10</td>
<td>TBD</td>
</tr>
<tr>
<td>CSci 717</td>
<td>17</td>
<td>TBD</td>
</tr>
<tr>
<td>CSci 372</td>
<td>24</td>
<td>TBD</td>
</tr>
</tbody>
</table>

ii. **Major Professor (6 PhD, 4 MS Students)**

1. Annaji Ganti, PhD
2. Mohammed Akour, PhD
3. Iyad Alazzam, PhD
4. Richard Rummelt, PhD
5. Talukdar Asgar, PhD
6. Sagar Bakliwal, PhD
7. Akanksha Jaidev, MS
8. Debajyoti Dash, MS
9. Asha Yadav, MS
10. Arti Katiyar, MS

iii. Graduate Student Committees (Completed)

1. Srikanth Aakula, MS Paper, Computer Science, Fall 2010, Major Advisor: Dr. Weiyi Zhang, completed oral defense on 11/15/2010.

iv. Graduate Student Committees (Ongoing)

1. Richard Rummelt, PhD, Software Engineering, Fall 2010 to Present, Major Advisor: Dr. Tariq M. King
2. Akanksha Jaidev, MS, Computer Science, Spring 2011 to Present, Major Advisor: Dr. Tariq M. King
3. Farah Kandah, PhD, Computer Science, Fall 2010 to Present, Major Advisor: Dr. Weiyi Zhang.
4. Revathi Dhamotharan, MS, Electrical and Computer Engineering, Spring 2010 to Present, Major Advisor: Dr. Rajendra Katti.
5. Anupama Reddy Annapureddy, MS, Computer Science, Fall 2010 to Present, Major Advisor: Dr. Kendall Nygard
6. Yang Liu, MS Computer Science, Fall 2010 to Present, Major Advisor: Dr. Weiyi Zhang.
7. Shi Bai, MS, Computer Science, Fall 2010 to Present, Major Advisor: Dr. Weiyi Zhang.
8. Suresh Paturu, MS, Computer Science, Fall 2010 to Present, Major Advisor: Dr. Kendall Nygard
10. Bethlehem Gronneberg, MS, Software Engineering, Spring 2011 to Present, Major Advisor: Dr. Kendall Nygard
11. Anita Sundaram, MS, Computer Science, Spring 2011 to Present, Major Advisor: Dr. Kendall Nygard
3. **Service**
   
a. **2009 Calendar Year**
   
i. **Department**
   
1. Faculty Advisor for the NDSU Chapter of Upsilon Pi Epsilon (UPE)

   
ii. **Professional**
   
1. Reviewer for the 3rd IEEE International Conference on Software Testing
2. Reviewer for NSF-funded CCLI Phase I Project: WReSTT – A Web-Based Repository of Software Testing Tools (DUE-0736833)
3. Invited Panelist for the 9th Annual Workshop on Teaching Software Testing

b. **2010 Calendar Year**
   
i. **Department**
   
1. Faculty Advisor for the NDSU Chapter of UPE
2. Graduate Admissions Committee
3. Software Engineering Comprehensive Exam Committee

   
ii. **Professional**
   
2. Program Committee, 10th IASTED Conference on Software Engineering
3. Organizing Committee for the 2nd Workshop on Integrating Testing into Programming Courses
4. Reviewer for the International Symposium on Software Reliability Engineering

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**Dean Knudson**

Research

a. **2009 Calendar Year**
   
i. **Refereed Publications**
   


   
ii. **Funded Proposals**
1. NSF – Collaborative for Scholarships in Computer, Information Science, and Engineering (CoCISE), awarded 2006, and runs for four years, $463,000, PI – Dr. Kendall Nygard, my role is to help coordinate the program by doing things like reviewing candidates and setting up talks for the students.

iii. Unfunded Proposals
1. Instructional Development Grant follow-on proposal to last year’s “Moving the Computer Science Capstone Course toward CMMI Level 2”, Dean Knudson, one year, $4500

2. NSF - OIA – CDI Type II: Netbook Learning: Farming in Virtual Fields, Brian Slator, Xiaojiang Du, Phillip McClean, Donald Schwert, four years, $1,603,469 – my role was Senior Personnel to manage relationship with OLPC program in Uruguay

3. NSF – IGERT: IGERT THINKERS for Tomorrow’s Problems in Food Logistics & Security, 5 years, Charlene Wolf-Hall, $???, my role was industry liaison

iv. Other Research Activities
1. I worked with the legal department to get the proper forms ready in order to set up a university/industry consortium program. We developed a draft document that works for legal and I checked it out with some people in industry. Phoenix International agreed to join the group and we had preliminary discussions regarding potential projects. I also started discussions with other companies regarding membership.

2. I also worked on getting Ken Nygard and ATC connected to potentially work on projects having to do with teams of agents/robots working in a coordinated cooperating manner to do things like search buildings areas.

3. I got Weiyi Zhang connected with people at ATC and they teamed on an NSF grant dealing with Future Internet Architectures.

4. I worked with several companies that sponsor Capstone projects to get their input on the software development and project management processes we use in our Capstone class. People from Medtronic, Phoenix and ATK worked on a process audit on our capstone processes.

b. 2010 Calendar Year
v. Refereed Publications

vi. Other Publications
Alex Radermacher, Adam Helsene, Dean Knudson, "Implementing Content Management Systems and Virtualization for Computer Science Capstone Courses", SIGUCCS Spring Management Symposium, Victoria, BC, April 19-21, 2010, conference papers are not to be published.

vii. Funded Research Proposals (title, PI and co-pi’s, duration, amount, source)
NSF – Collaborative for Scholarships in Computer, Information Science, and Engineering (CoCISE), awarded 2006, and runs for four years, $463,000. PI – Dr. Kendall Nygard, my role is to help coordinate the program by doing things like reviewing candidates and setting up talks for the students.

viii. Unfunded Proposals
NSF – CCLI Type 2 – Improving Computer Science Capstone Project Experiences, Dean Knudson, Gursimran Walia, Kenneth Magel, three years, $415,518.
NSF – MRI: Development of Robust WiMAX-based Testbed for Public Safety Monitoring, Weiyi Zhang, Dean Knudson, Jun Kong, Kendall Nygard, $310,075.

ix. Pending Proposals
NSF – PFI: Data-driven Support for the Smart Farm, Anne Denton, Philip Boudjouk, David Franzen, Reza Maleki, Saeed Salem, $599,303.

x. Other Research Activities
I worked with several companies (Microsoft, Sundog, Bolder Thinking, ATC, and Appareo) to determine how best to introduce a more agile development process into the capstone course. Several of the processes used by these companies are being introduced into the 2011 capstone course.
Working with Carsten Kleiner from the University of Applied Sciences and Arts in Hannover, Germany to propose and get accepted a Birds of a Feather session on “Capstone Projects in CS and SE – How do we reach out?” which will take place during the SIGCSE 2011 conference in Dallas, TX, March 9-12, 2011.
I worked with Anne Denton and Saeed Salem to help get them started with research for the NDSU CS Industry/University Consortium.
I worked with Tariq King to get him tied into Garth Tschetter, an IBM Manager, to see if they could work together on research involving testing in the cloud.
Working with NDSU legal and Research departments in order to finalize legal and overhead issues prior to setting up the industry/university consortium.
NDSU CS Industry/University Consortium established with four companies in the original team (Phoenix International, Agri ImGIS, American Crystal Sugar, RDO Equipment)! Worked with the companies to define a project they are all interested in funding and got it coordinated.
Working with Phoenix International to put in a proposal for corporate John Deere to fund their membership in our consortium through the NDSU Development Foundation.
- **Teaching**
  - **2009**

<table>
<thead>
<tr>
<th>Course #</th>
<th># of students</th>
<th>Instructor Rating</th>
</tr>
</thead>
</table>
| CS 445 – 3 credits, not new preparation | 42 (13 projects) | Instruction – 4.622  
Instructor – 4.703  
Communications – 4.757  
Quality – 4.649  
Fairness – 4.811  
Understanding – 4.649 |
| CS 716 – 3 credits, not new preparation | 5 (1 project) | (no rating – Dr. Magel’s class) |

- **2010**

<table>
<thead>
<tr>
<th>Course #</th>
<th># of students</th>
<th>Instructor Rating</th>
</tr>
</thead>
</table>
| CS 445 – 3 credits, not new preparation | 33 (9 projects) | Instruction – 4.324  
Instructor – 4.441  
Communications – 4.441  
Quality – 3.882  
Fairness – 4.353  
Understanding – 4.353 |
| CS 716 – 3 credits, not new preparation | 16 (4 projects) | (no rating – Dr. Magel’s class) |

- **Service:**
  - **2009**

  **Department**
  Arranged for several lectures from managers at Microsoft, IBM and Thomson West and arranged for CoCISE scholarship award winners to attend these talks as well as CS majors.  
  Worked with Ansal Institute students to screen them for the Capstone course and to recommend how to get ready for the course if they were not ready. Also screened all transfer students who came in after their sophomore year.  
  Worked with the department to give feedback on curriculum issues raised by sponsors in industry. This continued on to working with a curriculum review team that is addressing the whole CS undergraduate curriculum.

  **College**
  Arranged for a lecture from Olaf Storaasli, Distinguished Research Scientist, at Oak Ridge National Labs and introduced him to the people in charge of research in the Tech Park.

  - **2010**

  **Department**
  Arranged for several lectures from managers at Microsoft, IBM and ATK and arranged for CoCISE scholarship award winners to attend these talks as well as CS majors.  
  Worked with Ansal Institute students to screen them for the Capstone course and to recommend how to get ready for the course if they were not ready. Also screened all transfer students who came in after their sophomore year.  
  Attended several meetings with companies, delegates from China, Tech Fair, etc. in order to discuss our capstone program.
Research

- 2009 Calendar Year

i. Refereed Publications


ii. Funded Research Proposals

Title: Graphical Interface Interpretation Using Graph Grammars
Source: HP
PI: J. Kong
Duration: 08/01/2009 – 07/31/2010
Amount: $40,000

iii. Unfunded Proposals

Title: Adaptation of Web Information for Mobile Display
Source: NSF-IIS
PI: J. Kong

Title: WiMAX-based testbed for Public Safety Monitoring in Rural Areas
Source: NSF-CRI
PI: W. Y. Zhang
My Role: Co-PI

Title: Efficient and Trusted Information Sharing of Healthcare Systems
Source: NIH
PI: J. Kong

iv. Graduate student advisees completed (Major Advisors): 6 students

<table>
<thead>
<tr>
<th>Name</th>
<th>Degree</th>
<th>Date</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ramchandra Kadam</td>
<td>Master</td>
<td>Mar. 23, 2009</td>
<td>Automating a Robotic Coating System</td>
</tr>
<tr>
<td>Ambika S Tirupathi</td>
<td>Master</td>
<td>May 12, 2009</td>
<td>An Interactive Tool for JAVA Swing Education</td>
</tr>
<tr>
<td>Ravi Eda</td>
<td>Master</td>
<td>Sep. 4, 2009</td>
<td>A State Based Approach for Testing Menu Driven Applications</td>
</tr>
<tr>
<td>Yaswanth Potla</td>
<td>Master</td>
<td>Sep. 22, 2009</td>
<td>Adapting Web Page Tables on Mobile Devices</td>
</tr>
<tr>
<td>Qipeng Wu</td>
<td>Master</td>
<td>Dec. 15, 2009</td>
<td>A Graphical Tool for Test Generation for</td>
</tr>
</tbody>
</table>
State Models

v. Graduate student Committees on which you serve

<table>
<thead>
<tr>
<th>Name</th>
<th>Name</th>
<th>Name</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satheesh Chakravarthi</td>
<td>Praveen Kumar Emmadi</td>
<td>Annaji Ganti</td>
<td>Ramakrishnareddy Gooduru</td>
</tr>
<tr>
<td>Vasumathi Guduru</td>
<td>Harsh Jain</td>
<td>Jerilyn Kazeck</td>
<td>Oksana Myronovych</td>
</tr>
<tr>
<td>Huma Rizvi</td>
<td>Durga P. Ramamurthy</td>
<td>Sri Harsha</td>
<td>Yamparala</td>
</tr>
</tbody>
</table>

- 2010 Calendar Year

i. Refereed Publications


ii. Funded Research Proposals

Title: Mobile-Friendly Web Browsing  
Source: ND EPSCoR  
PI: J. Kong  
Duration: 09/01/2009 – 08/31/2011  
Amount: $77,600

iii. Pending Research Proposals

Title: MRI: Development of a Cross-Platform Infrastructure for Natural Interaction Research  
Source: NSF  
PI: J. Kong  
Duration: 09/01/2011 – 08/31/2014  
Amount: $396,206
iv. **Unfunded Proposals**

Title: II-NEW: WiMAX-based Testbed for Public Safety Monitoring in Rural Areas  
Source: NSF  
PI: W. Zhang  
My role: Co-PI

Title: CAREER: Information Adaptation for Efficient Mobile Browsing  
Source: NSF  
PI: J. Kong

Title: Designing Reliable Software with Graphical Notations  
Source: ND NASA EPSCoR  
PI: J. Kong

MRI: Development of a Robust WiMAX-based Testbed for Public Safety Monitoring  
Source: NSF  
PI: W. Zhang  
My role: Co-PI

Title: CDI-Type I: Discovering Information Organization From Unstructured Documents Using Graph Grammars  
Source: NSF  
PI: J. Kong

Title: HCC: Human-Centric Adaptive Multimodal Interface Design in the Pervasive Environment  
Source: NSF  
PI: J. Kong

v. **Graduate student advisees completed (Major Advisors): 2 students**

<table>
<thead>
<tr>
<th>Name</th>
<th>Degree</th>
<th>Date</th>
<th>Title</th>
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<tbody>
<tr>
<td>Sandeep Raavi</td>
<td>Master</td>
<td>April 9, 2010</td>
<td>XGRAPHML – A Tool for Transforming UML to GraphML</td>
</tr>
<tr>
<td>Ankita Sehgal</td>
<td>Master</td>
<td>April 7, 2010</td>
<td>Automatic Evaluation on Mobile Web Pages</td>
</tr>
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</table>

vi. **Graduate student Committees on which you serve**

<table>
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<th>Name</th>
<th>Name</th>
<th>Name</th>
<th>Name</th>
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<tbody>
<tr>
<td>Swathi Kondakindi</td>
<td>Phillip Reindl</td>
<td>Vijay anand</td>
<td>Naomi Takahashi</td>
</tr>
<tr>
<td>Siva Vanteru</td>
<td>Yan Wang</td>
<td>Benjamin Bengfort</td>
<td>Dibakar Bhowmick</td>
</tr>
</tbody>
</table>

vii. **Pending Publications**


- **Teaching**
  
  i. **Spring, 2009**

  Course: CSci 475 Operating Systems Design  
  Credits: 3  
  # of Students: 41

  ii. **Fall, 2009**

  Course: CSci 474 Operating Systems Concept  
  Credits: 3  
  # of Students: 41

  Course: CSci 488 Human Computer Interaction  
  Credits: 3  
  # of Students: 21

  Course: CSci 688 Human Computer Interaction  
  Credits: 3  
  # of Students: 20
iii. Spring, 2010
Course: CSci 475 Operating Systems Design Credits: 3 # of Students: 28

iv. Fall, 2010
Course: CSci 474 Operating Systems Concept Credits: 3 # of Students: 44
Course: CSci 488 Human Computer Interaction Credits: 3 # of Students: 19
Course: CSci 688 Human Computer Interaction Credits: 3 # of Students: 8

Service
- 2009

i. For the profession
Program Co-Chair
- The First International Workshop on Pervasive Computing Systems and Infrastructures (PCSI 2009), Held in conjunction with TridentCom’09, 2009.

Program Committee Member
- The 2009 Visual Information Communications International Conference
- The Annual ACM Symposium on Applied Computing - HCI Track
- The IEEE International Conference on Information Reuse and Integration
- The International Workshop on Visual Languages and Computing
- The International Conference on Software and Data Technologies
- The IASTED Intl. Conference on Internet & Multimedia Systems & Applications
- The IASTED International Conference on Wireless and Optical Communications

Guest Editor
- Multimedia Tools and Applications Systems

Journal Reviewer
- International Journal of Software Engineering and Knowledge Engineering
- International Journal of Computers and Applications

ii. For the University: University Senate

iii. For the College: faculty-student relations committee

iv. For the Department:
- CS Nomination Committee
- Faculty Recruiting Committee
- 2010

i. For the profession
Program Committee Member
• The 2010 International Congress on Computer Applications and Computational Science
• The 9th International Conference on Web-based Learning
• Visual Information Communications International
• The Annual ACM Symposium on Applied Computing
• The IEEE International Conference on Information Reuse and Integration.
• The International Workshop on Visual Languages and Computing
• The International Conference on Software and Data Technologies
• The IASTED International Conference on Internet & Multimedia Systems & Applications

Journal Reviewer
• IEEE Transactions on Multimedia, 2010
• Multimedia Tools and Applications, 2010
• Journal of Software and Systems, 2010

ii. For the University: University Senate

Juan Li

Research
• 2009 Calendar Year
  i. Refereed Publications
  Journals:

  Conference proceedings:
Book Chapter:

ii. **Presentations**

iii. **Funded Research Proposals**
1. NDSU Advance Forward Travel Grant, ($1,205), 2009.

iv. **Graduate Committees served**
1: Durga Ramamurthy (Advisor: Prof. Knygard)
2: Thilak Rajaraman (Advisor: Prof. Knygard)
3: Venkata Kurapati (Advisor: Prof. Knygard)
4: Qipeng Wu (Advisor: Prof. Kong)
5: Hari K Mukka (Advisor: Prof. Knygard)
6: Ushashi Chakraborty (Advisor: Prof. Denton)
7: Kareemullah Fazal (Advisor: Prof. Knygard)

v. **Unfunded Proposals**
3. NDSU President's Community Projects Award 2009.

- **2010 Calendar Year**
  i. Refereed Publications
    Journals:


**Conference proceedings:**


**Book Chapter:**

ii. Presentations

iii. Funded Research Proposals
1. NDSU Advance Forward Travel Grant, ($1,380), 2010.

iv. Graduate Students completing

v. Graduate Committees served
1: Mridula Sarker (Chair)
2: Mousumi Tanha (Chair)
3: Guy Hokanson (Advisor: Prof. Slator)
4: Harika.Mattapa (Advisor: Prof. Knygard)
5: Shaminda Samaraweera (Advisor: Prof. Knygard)
6: Anshuman Manori (Advisor: Prof. Knygard)
7: Rajani Garimedi (Advisor: Prof. Knygard)
8: Anshuman Manori (Advisor: Prof. Knygard)
9: Arijit Chatterjee (Advisor: Prof. Prerrizo)
10: Chin Lua (Advisor: Prof. Knygard)

vi. Pending Publications
3. J. Li, S. Khan, Q. Li, N. Ghani, N. Min-Allah, P. Bouvry, and W. Zhang, "Efficient Data Sharing over Large-Scale Distributed Communities”, a chapter in Intelligent Decision Systems in Large-Scale Distributed Environments.

vii. Unfunded Proposals
5. NDSU President's Community Projects Award. 2010.
7. NDSU Development Foundation Board of Trustees Endowment, 2010.

viii. Pending Research Proposals
1. NSF SoCS: Community-Based Collaborative Information and Communication System for Disaster Management, ($737,552), 2010.

ix. Other Research Activities
Graduate students advising: (9 students, at least 1 hour each student per week) Mridula Sarker, Mousumi Tanha, Farzana Jahan, Satheesh Chakravarthi, Chao Liu, Peyman Emamian, Shweta Tiwari, Ranjana Sharma, Qingrui Li

• Teaching

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• Service:
  • 2009 Calendar Year
    i. Professional
    Program Committee of:
    • The 15th International Conference on Distributed Multimedia Systems (DMS 2009)
    • The IEEE workshop DSMSA2009
    • The 2nd International Joint Conference on Computational Sciences and Optimization (CSO 2009)
Refereeing:
- IEEE’s Transactions on Parallel and Distributed Systems
- IEEE Communications Letters

ii. Department
  i. Graduate Comprehensive Exam Committee
  ii. Undergraduate students advising (7 students)

- 2010 Calendar Year
  i. Professional
    Program Committee of:
    - The IEEE workshop IWHGA 2010
    - The IEEE workshop DSMSA2010
    - OPTIM'10 workshop on "Optimization issues in energy efficient distributed systems".
    - The 3rd International Joint Conference on Computational Sciences and Optimization (CSO 2010)
    - The Third IEEE International Symposium on Trust, Security and Privacy for Emerging Applications (TSP-10)
    - The international conference on frontiers of information technology (FIT 2010).
    - The IEEE International Workshop on Networking and Communications for Advanced Society (NCAS2011)
    - The Fourth International Joint Conference on Computational Sciences and Optimization (CSO 2011)
    - The Sixth International Conference on P2P, Parallel, Grid, Cloud and Internet Computing (3PGCIC 2011) (Track-chair)
    - The 14-th IEEE International Conference on Network-Based Information Systems (NBiS-2011)

Editor of:
- International Journal of Computing & Information Technology (IJCIT)
- The Journal of Convergence (JoC)

Refereeing:
- The International Journal of Communication Networks and Distributed Systems
- IEEE’s Transactions on Parallel and Distributed Systems
- IEEE Communications Letters
- Elsevier Computer Communications
- IEEE GLOBECOM 2009
- EURASIP Journal on Wireless Communications and Networking
- Informatica
- Journal of Systems and Software
- Journal of Parallel and Distributed Computing
- The journal annals of telecommunications - annales des telecommunications
- Multimedia Tools and Applications

ii. Department
- Graduate Comprehensive Exam Committee
- Computer Science Tour for Science Fair 2010.
- Faculty advisor of Microsoft MORE Program (Mentoring, Outreach and Retention in Education for Women).
- Undergraduate students advising (16 students)

iii. College
- CSM Service & Outreach Committee

Simone Ludwig

Research
- 2009 Calendar Year
  i. Refereed Publications
  ii. Other Publications
     none
  iii. Presentations
     • “Artificial Life Techniques for Distributed Grid Job Scheduling”,


23rd Annual ACM Symposium on Applied Computing (SAC), Honolulu, Hawaii, USA, March 2009.


iv. **Funded Research Proposals (title, PI and co-PI’s, duration, amount, source)**
none

v. **Graduate Students completing for whom you were the advisor (name, degree, title of paper, date)**
- A. Moallem, MSc Computer Science, “Using Swarm Intelligence for Distributed Job Scheduling on the Grid”, defended in April 2009.

vi. **Graduate Student Committees on which you serve (indicate those for which you are Chair)**
- Committee Member, Tariq Muhammad, MSc defence, supervised by Dr. Julita Vassileva.
- Committee Member (external examiner), Roshan Parajuli, MSc defense, Department of Electrical and Computer Engineering, supervised by Dr. Carl McCrosky.
- Committee Member, Mohd Anwar, PhD defence, Department of Computer Science, supervised by Dr. Jim Greer.
- Dean’s designate, PhD defence of Doyle Anderson, Interdisciplinary Studies, supervised by Dr. Richard Long.
- Dean’s designate, PhD defence of Limei Zhang, Department of Geological Sciences, supervised by Dr. George.

vii. **Pending Publications**
n/a

viii. **Unfunded Research Proposals**
- S. Ludwig, New Investigator Establishment Grant Application, Saskatchewan Health Research Foundation, “Medical Decision Making”, $80,000, March 2009.

- **2010 Calendar Year**
  i. **Refereed Publications**
Management (PIKM) in conjunction with the 19th ACM Conference on Information and Knowledge Management (CIKM), October 2010, Toronto, Canada.

• S. A. Ludwig and S. Roos, “Prognosis of Breast Cancer using Genetic Programming”, Proceedings of 14th International Conference on Knowledge-Based and Intelligent Information & Engineering Systems (KES), September, 2010 Cardiff, Wales, UK.


ii. Other Publications

none

iii. Presentations


iv. Funded Research Proposals (title, source, PI and co-PIs, duration, amount)

• H. Ward, S. Card, S. Sheppard, S. Ludwig, B. Evans, K. Levesque, L. Ferguson, Inter-professional Health Collaborative of Saskatchewan (IHCS) Grant, A Pilot Case-based Virtual Learning Tool for IPE and Practice, $10,000, 1 year, 2010.

v. Graduate Students completing for whom you were the advisor (name, degree, title of paper, date)

none

vi. Graduate student Committees on which you serve (indicate those for which you are Chair)

• Committee Member, MS thesis defence, Samidip Basu, Department of Computer Science, supervised by Dr. Kendall Nygard.
• Committee Member (external examiner), Brendon Fredlund, MSc defence, Department of Electrical and Computer Engineering, supervised by Dr. Ahn Dinh
• Committee Member, Mangalagouri Masarakal, MSc defence, supervised by Dr. Regan Mandryk.
• Committee Member (external examiner), Amitoz Ralhan, MSc defence, Department of Electrical and Computer Engineering, supervised by Dr. Soek-Bum Ko and Dr. Yang Shi.
• Committee Member, Anil Keela, MSc proposal, supervised by Dr. Nadeem Jamali.
• Committee Member, Edgar Lelei, MSc proposal, supervised by Dr. Jim Carter.
• Committee Member, Wengang Liu, MSc defence, supervised by Dr. Gordon McCalla.
vii. **Pending Publications**


viii. **Unfunded Research Proposals**

- none

**Other Research Activities**

**Teaching**

- **Spring, 2009** (for each course give number, title, credits, number of students and indicate if it was a new preparation for you):
  - CMPT 418/820 T2, Intelligent Systems / Advanced Intelligent Systems, 3 credit course, 7 students.
  - CMPT 890 T2, Supervised research course, 3 credit course, supervised 1 student.

- **Summer, 2009 (same information)**
  - none

- **Fall, 2009 (same information)**
  - CMPT 317 T1, Introduction to Artificial Intelligence, 3 credit course, 25 students.
  - CMPT 100 Online T1, Introduction to Computing, 3 credit course, 15 students, new preparation.

- **Spring, 2010 (same information)**
  - CMPT 418/820 T2, Intelligent Systems / Advanced Intelligent Systems, 3 credit course, 18 students.
  - CMPT 880 T2, Supervised research course, 3 credit course, supervised 1 student.

- **Summer, 2010 (same information)**
  - none

- **Fall, 2010 (same information)**
  - CSCI 373: Assembly Programming, 3 credit course, 35 students, new preparation.

**Service**

- **2009**
  - **For the profession (refereeing, reviewing, service on Conference Committees or journal editorships) (give activity, dates of involvement)**
    - Session chair for IEEE International Conference on Fuzzy Systems, Jeju Island, Korea, August 2009.
    - Track Chair for Artificial Intelligence at 2nd International Conference on Computer Science and its Applications (CSA-09), Jeju, Korea, December 2009.
    - MITACS ACCELERATE Proposal, "Optimization of Road Alignment
• Reviewer for travel scholarship applications for the Grace Hopper Celebration of Women in Computing, June 2009.
• Reviewer for IEEE Transactions on Services Computing, February 2009.
• Program Committee of MCETECH conference (Montreal Conference on eTechnologies), Ottawa, Canada, May 2009.
• Symposium Chair of Intelligent Systems Symposium at the 2009 World Congress on Computer Science and Information Engineering (CSIE), Los Angeles/Anaheim, USA, April 2009.
• Chair of Women in Engineering (WIE) Affinity Group for IEEE North Saskatchewan.

ii. For the University (give activity, dates of involvement, and whether or not you held an office)
• Member at large, College of Graduate Studies and Research.

iii. For the College (same information)
none

iv. For the Department (same information)
• Department of Computer Science, Member and Acting Chair of Academic Honesty Committee.

• 2010 (same information in the same categories)

i. For the profession (refereeing, reviewing, service on Conference Committees or journal editorships) (give activity, dates of involvement)
• Reviewer for Journal of Engineering Applications of Artificial Intelligence, Elsevier, October 2010.
• Program Committee, First International Workshop on Service Intelligence 2010 (SI 2010) held in conjunction with WI-IAT 2010 IEEE Conference on Web Intelligence and Intelligence Agent Technologies in Toronto, Canada, September 2010.
• Program Committee, Third International Conference on Human-Centric Computing (HumanCom 2010), Cebu, Philippines, August 2010.
• Reviewer for IEEE Transactions on Services Computing, June 2010.
• Reviewer for travel scholarship applications for the Grace Hopper Celebration of Women in Computing, June 2010.
• Reviewer, NSERC Discovery Proposal, January 2010.
• Chair of Women in Engineering (WIE) Affinity Group for IEEE North Saskatchewan.

ii. For the University (give activity, dates of involvement, and whether or not you held an office)
• Member at large, College of Graduate Studies and Research.
• Member of International Committee of College of Graduate Studies.

iii. **For the College (same information)**
none

iv. **For the Department (same information)**
• Department of Computer Science, Chair of Academic Honesty Committee,

**Kenneth Magel**

**Research**

a. **Refereed**


b. **Research Proposals**

I intended to complete a research proposal in 2010, but did not. I was a co-principal investigator on a proposal whose principal investigator was Dean Knudson to the National Science Foundation. It was not funded.

c. **Graduate Students**

i. Completed.
   1. Oksana Myronovych, Ph.D., September 1, 2009.
2. Senad Cimic, M.S., September 4, 2009
6. Dibakar Bhowmick, M.S., September 8, 2010

ii. Supervisor
   1. Falah Bouchaib, Ph.D., expected May, 2011.
   2. Nine M.S. students.

2. Service
   a. Department
      i. Associate Department Head, July 1, 2007 - present
      ii. Developed Department Self Study Report for Program Review
      iii. Chair, Faculty Recruiting Committee, August 20, 2005 – present
      iv. Software Engineering Coordinator, July 1, 2002 – present
      v. Evaluate transfer equivalency for at least thirty-five requests each year
      vi. Representative to the NDUS Common Course Computer Science Group
      vii. Developed distance education version of Software Engineering Graduate Certificate
      viii. Developed distance education versions of five courses as part of the Master of Software Engineering online program. Coordinated development of five other distance education courses for this program by other department faculty.
      ix. Chair, B.S. Curriculum Review Committee, 2010 - present. Greatly revised B.S. and B.A. curricula were adopted by the Department in 2010 for implementation starting fall, 2011.
      x. Together with Dean Knudson, conducted interviews of all transfer students for suitability for the B.S. capstone course each fall.
      xi. Developed and graded the Software Engineering section of the Computer Science Comprehensive/Qualifier examination each semester
      xii. Developed and coordinated the group grading of the Software Engineering Comprehensive/Qualifier examination each semester
      xiii. Developed extensive assessment materials including the first materials for the graduate curricula
      xiv. Visited with more than 16 prospective students each year
      xv. Developed Department Annual Report analysis text each year
      xvi. Assessed at least eight graduate applications each year when requested by the Graduate COordinator

   b. College
      i. Nominations and Awards Committee, October, 2005 – present; Chair August, 2007 - present
      ii. Curriculum Committee, October, 1985 - present

   c. University
      i. Faculty Personnel Committee, May, 2005 – May, 2009
      iii. Institutional representative to the Computing Research Association

   d. Profession
      i. Referee for numerous conferences and journals
      ii. Institutional Representative, Computing Research Association
### 3. Teaching

#### a. Spring, 2009

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<td>CSci 713 (3 credits)</td>
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<td>Software Design</td>
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#### b. Summer, 2009

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#### c. Fall, 2009

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#### d. Spring, 2010

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g. Spring, 2011

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</table>

Oksana Myronovych

Research

- 2009 Calendar Year

  i. Other publications

  - Modified Genetic Algorithm for Mutation-Based Testing, *WORLDCOMP'09 (The 2009 World Congress in Computer Science, Computer Engineering, & Applied Computing)*, Date and Location: July 13-16, 2009, Las Vegas, USA (Paper ID #: SER6011)
• 2010 Calendar Year

i. Other publications


**Teaching**

- **Spring 2009 (10 credits)**

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f. **Spring – 2010 (13 credits)**

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g. Summer 2010 (3 credits)

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h. Fall 2010 (10 credits)

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<tr>
<td>CSci160</td>
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<td>CSci172</td>
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<td>CSci227</td>
<td>36</td>
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**Professional development:**

Professional Conferences:

- *2009 Microsoft Web Design & Development Conference (MIX09), March 17-20, 2009, Las Vegas, NV.*
- *2009 MSDN Developer Conference, January 13, 2009, Minneapolis, MN.*

**Service:**

2009 - Department
- Member of CS Department recruiting committee for a new Bioinformatics tenure track position.

2010 - Department
- Member of CS Department curriculum committee.
- Advisor for: CSci122, CSci125, CSci159
Membership:
- Member of Upsilon Pi Epsilon (UPE) - NDSU Chapter
- Member of Association for Computing Machinery (ACM)

Kendall Nygard

Research

- **2009 Calendar Year**
  i. **Refereed Publications**
  
  
  
  
  
  

  ii. **Funded Research Proposals** (title, PI and co-PI’s, duration, amount, source)
  
  
  
  Key Management in Wireless Networks, Graduate Student Research Assistantship Award, National Science Foundation and North Dakota EPSCoR, 6/1/08 – 8/15/10, $33,392.

Faculty visitors from China program, PI: Kendall E. Nygard, Zhejiang Economic and Trade Polytechnic, 5/1/09 – 9/1/09, $20,000.


iii. Graduate Students completing for whom you were the advisor

Durga Ramamurthy, MS, Ecommerce Application of Bloom’s Taxonomy
Barjesh Arora, Conflict Area Resolution using Heterogeneous Resources in a Dynamic Environment
Vasanth Narayanan, A Sweep Search and Strink Air Controller Mission Simulator
Pranav Dass, Dominating Set for Point Coverage in Wireless Sensor Networks
Sri Harsha Yamparala, MS, Sensor Network Routing Using Simulated Annealing
Annaji Ganti, MS, Learning Software Agents with Bloom’s Taxonomy
Venkata Kurpati, MS, Shortest Path First Heuristics
Rajani Garimedi, MS, A Tutorial for Teaching E-Commerce Applications

iv. Graduate Student Committees on which you serve

See below

v. Pending Publications

vi. Unfunded Research Proposals

• 2010 Calendar Year

i. Refereed Publications


Ranganathan, P. and K. Nygard, A Bloom’s Online Assessment Test to Assess Student Learning Outcomes in a Distance Engineering Education Course, International Conference on Engineering Education and Technology, July, 2010

ii. Funded Research Proposals


Smart Grid Simulation, Graduate Research Assistantship Award, National Science Foundation and North Dakota EPSCoR, 8/10 -8/12, $33,392.

Key Management in Wireless Networks, Graduate Student Research Assistantship Award, National Science Foundation and North Dakota EPSCoR , 6/1/08 – 8/15/10, $33,392.

Faculty visitors from China program, PI: Kendall E. Nygard, Zhejiang Economic and Trade Polytechnic, 5/1/10 – 12/1/10, $5,106.


iii. Graduate Students completing for whom you were the advisor
Chin Lua, PhD, A Virtual Experiment Driven Process Model
Yan Wang, MS, A Closed Form Optimization Model for the Conflict Neutralization Problem
Samidip Basu, MS, Optimization of Mobile Sensor Movement in Self-Healing Sensor Networks
Shaminda Samaraweera, MS, A Network Optimization Solver for Routing in Wireless Sensor Networks
Venkata Raidu, MS, A Computational Procedure for the Conflict Neutralization Problem
Vijayanan Suravarapu, MS, A Technique to Detect a Black Hole in ad hoc Networks
Pavan Bapanpally, MS, Neutralization of Conflict Areas Using an Ant Colony Heuristic Approach
Manu Bogadi, MS, Teaching Encryption: A Learning Theory Approach
Harika Mattaparthy, MS, Electronic Payment System Decision Support with Bloom’s Taxonomy
Anshuman Manori, MS, Optimizing Incident Management Strategies Using Simulation
Paul Loree, MS, Post-Deployment Key Management in Heterogeneous Wireless Sensor Networks
Shivendushital Pandey, Dynamic Algorithms for Sensor Scheduling and Adversary Path Prediction
Swathi Kondakindi, MS, Pheromone Clustering
Divya Gupta, MS, Alternative Clustering Algorithms in Sensor Networks
William Voorhees, MS, Sensor Network Clock Synchronization
Mayukh Sharma, MS, Web-based Meeting Scheduler
Joel Hensley, MS, Advanced Computational Ratings for College Football Teams
Hari Mukka, MS, A Software Agent System for Private Email
Phillip Reindl, MS, Anonymity and Hostile Node Identification in Sensor Networks

iv. Graduate student Committees on which you serve (includes both 2009 and 2010)
Ming Zhang, PhD, Computer Science, Chair
Jingjun Zhao, PhD, Computer Science, Chair
Jonathan Pikalek, PhD, Computer Science, Chair
Satheesh Chakravarthi, PhD, Computer Science, Chair
Paul Loree, PhD, Computer Science, Chair
Ying (Erin) Yang, PhD, Computer Science, Chair
Kanwaliner Gagneja, PhD, Computer Science, Chair
Lisa Lacher Bender, PhD, Software Engineering, Chair
Steve Bou Ghosn, PhD, Computer Science, Chair
Prakash Ranganathan, PhD, Computer Science, Chair
Martin Lundell, PhD, Software Engineering, Chair
Divya Dayala, MS, Computer Science, Chair
Richard Frovarp, MS, Computer Science, Chair
Ashish Teotia, MS, Computer Science, Chair
Karthik Murugesan, MS, Computer Science, Chair
Aman Sharma, MS, Computer Science, Chair
Naga Byrisetty, MS, Computer Science, Chair
Saumya Singh, MS, Computer Science, Chair
Siva Ginjupalli, MS, Computer Science, Chair
Susbi Sharma, MS, Computer Science, Chair
Ghanashyam Nayakam, MS, Computer Science, Chair
Sriker Pachva, MS, Computer Science, Chair
Arjun Gensan, MS, Computer Science, Chair
Puja KC, MS, Computer Science, Chair
Sunil Kolluru, MS, Computer Science, Chair
Sowjanya Param, MS, Computer Science, Chair
Sharath Sambaraju, MS, Computer Science, Chair
Bandana Garg, MS, Computer Science, Chair
John Kroshus, MS, Computer Science, Chair
Divya Dayala, MS, Computer Science, Chair
Birendra Thapa, MS, Computer Science, Chair
Ritika Sahni, MS, Computer Science, Chair
Md. Minhaz Chowdhury, MS, Computer Science, Chair
Mohammed Baqui, MS, Computer Science, Chair
Ryan McCulloch, MS, Computer Science, Chair
Nikitha Karpurhi, MS, Computer Science, Chair
Sudesh Mukhami, MS, Computer Science, Chair
Sandeep Sikhamari, MS, Computer Science, Chair
Sandeep Poreddy, MS, Computer Science, Chair
Sunil Maddi, MS, Computer Science, Chair
Anupama Anupareddy, MS, Computer Science, Chair
Karen Fazal, MS, Computer Science, Chair
Nazeer Fazal, MS, Computer Science, Chair
Suresh Paturu, MS, Computer Science, Chair
Anita Sundaram, MS, Computer Science, Chair
Ramneet Chinna, MS, Computer Science, Chair
Nikhil Koganti, MS, Computer Science, Chair

Chris Enyinda, PhD, Transportation and Logistics
James Boe, PhD, Education
Mohammed Rahman, MS, Computer Science
Lei Fan, PhD, Transportation and Logistics, Graduate School Rep
Jeffrey Wendt, PhD, Transportation and Logistics, Graduate School Rep
Leeleng Chen, PhD, Transportation and Logistics, Graduate School Rep
Marvin Lenoue, PhD, Education, Graduate School Rep
Peder Gjovik, PhD, Education, Graduate School Rep
Aida, Vosoughi, MS, Electrical and Computer Engineering, Graduate School Rep

v. Pending Publications
vi. Unfunded Research Proposals

• Other Research Activities

• Teaching
  • Spring, 2009

CSci 489/689, Social Implications of Computers, 3 credits, 74 students
CSci 783, Topics in Software Systems, 3 credits, 2 students
CSci 790, Graduate Seminar, Sensor Networks, 1 credit, 19 students
TL 725, Advanced Technologies in Logistics, 3 credits, 7 students
  • Summer, 2009
CSci 473/773, Foundations of the Digital Enterprise, 3 credits, 40 students
CSci 774, Topics of the Digital Enterprise, 3 credits, 13 students
CSci 790, Graduate Seminar, 1 credit, 2 students
Educ 790, Graduate Seminar, 1 credit, 11 students
  • Fall, 2009
CSci 418/618, Simulation Models, 3 credits, 16 students
CSci 790, Graduate Seminar, Sensor Networks, 1 credit, 13 students
  • Spring, 2010
CSci 489/689, Social Implications of Computers, 3 credits, 96 students
CSci 783, Topics in Software Systems, 3 credits, 13 students
CSci 793, Individual Study, 3 credits, 1 student
CSci 790, Graduate Seminar, Sensor Networks, 1 credit, 20 students
TL 725, Advanced Technologies in Logistics, 3 credits, 8 students
  • Summer, 2010
CSci 473/773, Foundations of the Digital Enterprise, 3 credits, 39 students
CSci 774, Topics of the Digital Enterprise, 3 credits, 26 students
CSci 793, Individual Study, 3 credits, 1 student
  • Fall, 2010
CSci 453/653, Linear Programming and Network Flows, 3 credits, 16 students
Educ 790, Graduate Seminar, 1 credit, 6 students

• Service
  • 2009
    i. For the profession
       Advisory Editor, Journal of Heuristics, 1994 –date
       Panel reviewer, NSF S-STEM program, 2009
       Referee for multiple technical papers for multiple journals
    
    ii. For the University
       Faculty Advisor, Bangladeshi Student Association, 2009
       iii. For the Department (same information)
       Graduate Program Coordinator
       Hosted and developed workshops for 8 visiting faculty members from China
       Departmental Award nominations committee
  
  • 2010
    i. For the profession
       Advisory Editor, Journal of Heuristics, 1994 –date
       Referee for multiple technical papers for multiple journals
       Invited panelist, Context-aware Systems and Adaptation, The Future Computing
       Conference, Lisbon, Portugal, November, 2010
ii. For the University
Faculty Advisor, Bangladeshi Student Association, 2009

iii. For the Department (same information)
Graduate Program Coordinator
Hosted and developed workshops for 7 visiting faculty members from China
Hosted the President and 4 Deans from China Three Gorges University
Departmental Award nominations committee

William Perrizo

Research

iv. Refereed Publications


i. Presentations 5 of the conference paper presentations as listed above.

ii. Funded Research Proposals (title, Pl/Co, duration, amt, source)
1. NDSU University Distinguished Professorship Research Award, P.I., 2009, $5,000, NDSU Office of the President.

iii. Graduate student advisees completed

iv. Other Research Activities
3. Four of the NDSU patents for which I am the inventor of record have been licensed in an all-fields exclusive licensing agreement, along with approximately 10,000 lines of software implementing the technology (C++ programs, shell and perl scripts), to a company out of Maryland called Treeminer.

Teaching

2009

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<td>479 Spring 2009</td>
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<td>679 Spring 2009</td>
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</tr>
<tr>
<td>766 Spring 2009</td>
<td>5</td>
<td>See dept records?</td>
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<tr>
<td>783 Fall 2009</td>
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<td>See dept records?</td>
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<td>765 Fall 2009</td>
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Spring 2010

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Fall 2010

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- Spring 2011

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<tr>
<td>DCE765 Spr 2011</td>
<td>16</td>
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Service:

**2009-2010**

**Department**
- Computer Science Department Bioinformatics Curriculum Committee
- Computer Science Department Graduate Program Fall Semester Comprehensive Examination Committee
- Computer Science Department Graduate Program Spring Semester Comprehensive Examination Committee

**College**
- College of Science and Mathematics Mission, Vision, and Goals Development Committee
- College of Science and Mathematics Promotion, Tenure and Evaluation Committee

**University**
- Center for High Performance Computing Advisory Board
- University Distinguished Professorship Committee
- Genomics and Bioinformatics Interdisciplinary Degree Program Board Member
- Center for High Performance Computing Director Search Committee

**Professional**
- Associate Editor, Journal of Computational Intelligence in Bioinformatics, JCIB
- Associate Editor, Bioinformation Journal
- Program Committee and referee for 8 International Conferences
- Refereed for 3 journals

**Richard Rummelt**

Research

- **2009 Calendar Year**
  - **Research Activities**
    - Work on PhD dissertation, Dr. Tariq M. King advisor.
    - *Validation of Course Modules in Standardized Adaptive Learning Systems*

- **2010-2011 Calendar Year**
  - **Pending Proposals**
    - Richard Rummelt (senior personnel), Tariq M. King (PI), “Collaborative Research: Integrating Testing into CS-I thru CS-III with the Support of a Web-Based Testing Repository”. Agency: NSF. Program: CCLI. Amount requested: $173,000 for 3 years. Collaborative proposal with Dr. Peter J. Clark (PI-FIU $367,000 requested) and Djuradj Babich (PI-MDC $58,000 requested).

  - **Research Activities**
    - Participated in an experiment on 'Pair Programming' in Computer Science I. Dr. Gursimran Walia – primary investigator.
iii. Publications

Investigating the Use of Pair Programming at North Dakota State University: A Family of Empirical Studies

Gursimran Walia, Richard Rummelt, et al

iv. Research Activities

Work on PhD dissertation, Dr. Tariq M. King advisor.

Validation of Course Modules in Standardized Adaptive Learning Systems

- Teaching

- 2009

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<td>CSci-160 - 4511</td>
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<td>UNIV-189 - 5021</td>
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<td>UNIV-189 - 5027</td>
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<td>N/A</td>
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<td>CSci-160 – 4452</td>
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<td>CSci-160 - 14636</td>
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<td>CSci-160 - 18869</td>
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- 2010

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<td>CSci-160 - 9874</td>
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a. 2011

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<td>CSci-160 - 9424</td>
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<td>In Progress</td>
</tr>
<tr>
<td>CSci-160 – 10956</td>
<td>31</td>
<td>In Progress</td>
</tr>
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<td>CSci-116 - 5805</td>
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</tr>
<tr>
<td>CSci-160 - 2619</td>
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</table>

- **Service: 2009**
  - **Department**
    - Recruiting/Advising – Regularly met potential students and their parents to promote the Computer Science undergraduate program.
    - ‘Partnered’ with new junior faculty to assist them in conducting meetings with potential students and their parents.

- **College**
  - Faculty Advisor & President: Upsilon Pi Epsilon International Honor Society for the Computing Sciences
  - Faculty Advisor: NDSU ACM Student Chapter

- **University**
  - Assisted in coordination of the Chinese Teachers’ Training Seminars
  - Faculty Advisor: Sri Lankan Student Association

2010
- **Service: 2010**

  - **Department**
    - Supervision and mentoring of Computer Science Graduate teaching assistants.
• Recruiting/Advising – Regularly met potential students and their parents to promote the Computer Science undergraduate program.

• ‘Partnered’ with new junior faculty to assist them in conducting meetings with potential students and their parents.

• Attended the Prentiss Hall Symposium for Information Technology Educators in Chicago, Illinois

• Attended the Course Technology Conference in Tampa, Florida

• Member of the Curriculum Development Committee

• Member of ‘Teaching Free Semester’ Review Committee.

• Attended the 2nd Workshop on Integrating Software Testing into Programming Courses at Florida International University, Miami Florida.

College
• Faculty Advisor: Upsilon Pi Epsilon, International Honor Society for the Computing Sciences

• Faculty Advisor: NDSU ACM Student Chapter

University
• Assisted in coordination of the Chinese Teachers’ Training Seminars

• Faculty Advisor: Sri Lankan Student Association

• Established an inter-departmental committee to coordinate Computer Science ‘Business use of Computer’ course content with the College of Business requirements.

Professional
• Judge for the Association of Computing Machinery: International Programming Competition

2011

Department
• Supervision and mentoring of Computer Science Graduate teaching assistants.

• Recruiting/Advising – Regularly meeting potential students and their parents to promote the Computer Science undergraduate program.

• ‘Partnered’ with new junior faculty to assist them in conducting meetings with potential students and their parents.
College

- President: Upsilon Pi Epsilon, International Honor Society for the Computing Sciences
- Faculty Advisor: NDSU ACM Student Chapter

University

- Faculty Advisor: Sri Lankan Student Association
- Continuing inter-departmental coordination of the Computer Science ‘Business use of Computer’ courses with the College of Business.

Saeed Salem

Research

- 2010-2011 Calendar Year
  i. Refereed Publications
     Refereed Journals:


     Refereed Conferences/Workshops:


ii. Other publications

iii. Presentations


iv. Funded Research Proposals (title, PI and co-pi’s, duration, amount, source)

| 1. PI: NDSU Computer Science Industry Consortium Program (ICP). American Crystal Sugar Company, MN, **Amount**: $15,000. (Co-PI: Prof. Anne Denton) On paper, the above is the generic title of the grant. But we are doing this for the project, “Sugarbeet Yield Prediction using Satellite Imagery.” |
| 2. PI: Integrating GPS devices in the collection of yield data. RDO Equipment Co, MN, **Amount**: $15,000. (Co-PI: Prof. Anne Denton) |

v. Unfunded Proposals

vi. Pending Proposals

| 1. Co-PI: PFI: Data-driven Support for the Smart Farm. **PI**: Prof. Anne Denton **Co-PI(s)**: David Franzen, Saeed Salem, Reza Maleki, Philip Boudjouk **Requested Amount**: $599,303.00 |

vii. Graduate student advisees completed

Masters
- Phd: Shadi BaniTaan (Ongoing) James Brewer (Ongoing) Rami Alroobi (Ongoing) Ibrahim Aljarah (Ongoing)

viii. Other Research Activities

Supervising undergraduate research students:
- Craig Stenger (undergraduate research assistant), Sugarbeet Yield prediction
- Diego Pirizbruny (Exchange Student: Graph clustering and Analysis) Joseph Ching (Junior, Graph clustering and Network Analysis)

1. Teaching
   a. 2010
<table>
<thead>
<tr>
<th>Course #</th>
<th># of students</th>
<th>Instructor Rating</th>
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<td>10</td>
<td>Q2:-- Q5:5.0, Q6:4.8</td>
</tr>
<tr>
<td>Spring 2010 CSCI 790 (Denton/Salem) Seminar</td>
<td>7</td>
<td>N/A</td>
</tr>
<tr>
<td>Fall 2010 CSCI479/679 (Intro to Data Mining)</td>
<td>14</td>
<td>N/A</td>
</tr>
<tr>
<td>Fall 2010 CSCI 474 Operating Systems</td>
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<td>N/A</td>
</tr>
<tr>
<td>Fall 2010 CSCI 790 Graduate Seminar</td>
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b. 2011

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<tbody>
<tr>
<td>Spring 2011 CSCI 366</td>
<td>42</td>
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</tr>
<tr>
<td>Spring 2011 CSCI 790 Seminar</td>
<td>6</td>
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2. Service:
   2010-2011

   **Department**
   (Jan. 21010—present), Department Curriculum Committee
   Attending Department meetings

   **College**
   Welcome Week, August 23rd 2010.

   **University**
   **Judge:** 2010 North Dakota State Science & Engineering Fair
   **Even Supervisor:** 2010 “Compute This” ND Science Olympiad

   **Professional:**
   Reviewer: IEEE Transactions on Knowledge and Data Engineering, April, 2010
   Reviewer: IEEE/ACM Transactions on Computational Biology and Bioinformatics, October, 2010
   Reviewer: Journal of Combinatorial Chemistry, September, 2010
   Reviewer: Journal of Mathematical Biology, December, 2010
Brian Slator

A. Research Accomplishments (January 1, 2009 through December 31, 2010):

Books and Creative Works

Journals

Refereed Conference Papers

Book Chapters

Refereed Abstracts
Slator, Brian M. Otto Borchert, Guy Hokanson, Kim McVicar, John Reber, Donald P. Schwert (Accepted, 2010). Assessing Performance and Confidence in a Multi-Player Environmental
Science Game. Manitoba Association for Distributed Learning and Training (MADLaT)
http://www.madlat.ca/ 2011 International Conference
Eau Claire, WI. April 16-17.
Schlecht, Nem W., Brian M. Slator, Phillip McClean (2009). Usage of a Web-Based Factorial
Instruction and Computing Symposium. South Dakota School of Mines and Technology.
Rapid City, SD. April 17-18.
Daniels, Lisa, Otto Borchert, Guy Hokanson, Jeff Clark, Bernhardt Saini-Eidukat, Don Schwert,
Brian Slator, Jeff Terpstra. (2009). Effects of Immersive Virtual Environments on Student
Achievement and Confidence. Proceedings of the American Educational Research

Education Animations
McCLean, Phil, Alan White, Brian M. Slator (2009). Signaling Pathways: Insulin Signaling
(animation: Gerald Gallenbeck, Christina Johnson, narration, editing: Christina Johnson),
Copyright: NDSU Worldwide Web Instructional Committee (WWWIC).
McCLean, Phil, Alan White, Brian M. Slator (2009). Protein Recycling (animation: Gerald
Gallenbeck, Christina Johnson, narration, editing: Christina Johnson), Copyright: NDSU
Worldwide Web Instructional Committee (WWWIC).

Publicity
Wikipedia – Entry on "Word Sense Disambiguation"
Cited in the 'References' as co-author of first book, "Electric Words". Referenced 7/20/08.
See http://en.wikipedia.org/wiki/Word_sense_disambiguation

A.4 Presentations (list date, group presented to, title of presentation)
Learning Environments – what we’ve learned”

A.5 Grants (list complete set of PIs and Co-PIs, title, program submitted to, amount, date, status
(submitted, accepted, declined)):

See Below: Entrepreneurial and Outreach Activities

Honors and Awards: Prior Awards, Still Current (during 2009-2010)
2009-2012 National Science Foundation (CCLI) No. DUE-0918955, to Dr. Phil McClean, PI, Brian
M. Slator and Alan R. White, Broadening the Accessibility and Portability of Biology
Animations, 3 years, $494,900
2006-2009 National Science Foundation (CCLI) No. DUE-0618766 to Dr. Phil McClean, PI, Lisa
Daniels, Brian M. Slator, Jeff Terpstra, and Alan R. White, Visualization in Biology
Education, 3 years, $452,355
2006-2010 National Science Foundation (S-STEM). No. DUE-0631126 to Dr. Kendall Nygard, PI,
Charles Harter, Rajendra Katti, Brian M. Slator, Collaborative for Scholarships in
Computing, Information Sciences, and Engineering, 4 years, $463,200
Honors and Awards: Prior Awards (Expired in 2009-2010)

2006-2009 National Science Foundation (Geo-Ed) No. GEO-0608082 to Dr. Brian M. Slator, PI, Lisa Daniels, Bernhardt Saini-Eidukat, Donald P. Schwert, and Jeff Terpstra, Pilot Project: Research on Serious Games for Geoscience Education, 2 years, $149,984, plus one year no-cost extension

Entrepreneurial and Outreach Activities
WoWiWe Instruction Co LLC (President), SBIR Phase I: An Environmental Geology Game for Discovery-oriented Science and Mathematics Education. National Science Foundation. Award Number: IIP-0945807, 01/01/2010 - 12/31/2010, $150,000
WoWiWe Instruction Co LLC (President), SBIR Phase I: A multi-user virtual Biology environment for discovery-oriented science education. National Institutes of Health. Award Number: NIH-1R43RR024779-01A1, 04/15/2008 - 4/15/2009, $100,000

Proposals Submitted – Declined or Pending:
NSF-GEO3D, Geology Explorer 3D: Immersive physical geology in a college setting, Declined, Submitted 05/27/2010, $200,000, requested
NSF-GEO, Track I: Dissemination of a Serious Game for Environmental Science, Pending Submitted 03/08/2010, $150,000.00 requested
NSF-DGE, Science Masters Program: Software and Computational Science Village, Declined, Submitted 11/20/2009, $700,000.00 requested
NSF-CNS, CDI-Type II: Netbook Learning: Farming in Virtual Fields, Declined, submitted 06/03/2009, $1,773,720.00 requested
NSF-CNS, CPATH-1: Empowering Computational thinking using an Immersive Virtual Environment, Declined, Submitted 05/05/2009, $300,000.00 requested
NSF-EEC, An Exploratory Study to Develop Inquiry-Based 3D Case Study Modules Using 400-year-old Documents to Improve Student Understanding of Core Mechanical Engineering Concepts North Dakota State U Fargo, Declined, Submitted 03/09/2009 $144,242.00 Requested
NSF-DRL, Strategies: Bridging the Computer Science Crisis with Virtual Environments North Dakota State U Fargo Pending Submitted 02/20/2009 $1,083,315.00 Requested
NSF-OCI, Collaboration Research: vDUSEL CORE in support of Cyberinfrastructure-enabled Learning and Research Projects Dakota State Univ Pending Submitted 02/12/2009 $966,558.00 Requested
NSF-DUE, Broadening the Accessibility and Portability of Biology Animations North Dakota State U Fargo Pending Submitted 01/09/2009 $494,900.00 Requested

B. Service:

B.1 Department:
CS-NOM (2007-present), Department of Computer Science Award Nomination Committee.
NDSU-CS (2002-2004, Chair, 2005-2006, Member), Department of Computer Science Faculty Search Committee
CS-MIS (1998-present). Committee member, Management Information Sciences (MIS) Steering Committee, Jospeh Latimer, Chair.

B.2 College:
CSM Chairs Council (2007-present). Monthly meeting of the College and Science and Mathematics department heads/chairs with the Dean
NDSU-RCC (2003-2006). College of Science and Mathematics representative on the NDSU Research and Consulting Committee

B.3 University:
Provost's Chairs Council (2007-present). Monthly meeting of the NDSU department heads/chairs with the Provost
Graduate Leaders Forum (2007-present). Monthly meeting of the NDSU department heads/chairs with the Dean of the Graduate School

B.4 Profession:

B.5 Other:

C. Teaching (list courses by semester including credit hours and numbers of students)

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course</th>
<th>Credit Hours</th>
<th>Number of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring 2009</td>
<td>CS 790</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>Spring 2009</td>
<td>CS345</td>
<td>3</td>
<td>26</td>
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<tr>
<td>Summer 2009</td>
<td>Governors School</td>
<td>N/A</td>
<td>9</td>
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<tr>
<td>Fall 2009</td>
<td>CS 790</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>Spring 2010</td>
<td>CS 790</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>Spring 2010</td>
<td>CS345</td>
<td>3</td>
<td>34</td>
</tr>
<tr>
<td>Fall 2010</td>
<td>CS790</td>
<td>1</td>
<td>16</td>
</tr>
</tbody>
</table>

**Graduate Student Progress**

a) as major professor (completed)
Ben Dischinger, (2010) M.S. Computer Science
Guy Hokanson, (2010) M.S. Computer Science

b) as major professor (ongoing)
Jacob Halvorson, M.S. Computer Science

c) as examining committee member (completed)
Barjesh Arora, M.S. Computer Science, Richard Jockheck, PhD, Computer Science, Aaron Clarke, PhD, Psychology, Kanwal Gagneja, PhD, Computer Science

d) as examining committee member (ongoing)
Harvincer Kaur, M.S. Computer Science
Undergraduate Student Mentorship

Raashi Chugh, undergraduate research employee on the Blackwood Project
Robert Foertsch, undergraduate system administrator

Department Head Activities (January 1, 2009 – December 31, 2010)

1/23/2009 – Met Prof. Yadav, Dean, Ansal Institute
2/10/2009 – Hosted the Departmental visit by Dr. Chapman and Dr. Schnell, IACC 258C
2/11/2009 – Youth Entrepreneurial Task Force Meeting, Reimers Rm. Alumni Center
2/25/09 – Three Chairs Lunch with the Dean
3/2/2009 – Program Review on-site inspection
3/4/2009 – Met CSM PTE Committee, Dr. Jun Kong 3rd Year Review
April-May, 2009 – Hired Gursimran Walia, Tariq King, Saeed Salem, and Chengui Yan
4/24/2009 – Met Sudhir Mehta, Liaison, Ansal Institute
5/7/2009 – CSM Awards Ceremony, Alumni Center
5/8/2009 – Luncheon, Dr. Toni Schmader, the Science of Unconscious Bias
5/11/2009 – Myers Summer Research Planning – MU, Lark Room
5/13/2009 – Program Review, committee meeting
6/8-7/17/2009 – Governors School – Business/Entrepreneurial Section
6/11/2009 – Video Conferencing capability installed in CS conference room
6/12/2009 – Student Orientation (also 6/15, 6/19, 6/22-26)
July09: Wrote and submitted EPSCoR Startup Proposal, funded for $66,000
7/7/2009 – Student Orientation (also 7/8-11)
7/29/2009 – Barjesh Arora MS Defense
8/3/2009 – Student Orientation (also 8/4, 8/18, 8/24)
8/19/2009 – Met Sudhir Mehta, Liaison, Ansal Institute
9/14/2009 – Hosted Dr. Joseph Konstan on Social Computing Research
9/21/2009 – Three Chairs Lunch with the Dean
10/6/2009 – Junior Faculty visit to Microsoft, lunch for eleven
10/29/2009 – Three Chairs Meeting with the Dean
11/18/2009 – Meet John Jasper and Bolder Thinking Group, Stevens Hall
12/11/2009 – Three Chairs Lunch with the Dean
1/7/2010 – EPSCoR New Faculty Startup Interview, Research 1
2/16/2010 – Reception for Community Business, Alumni Center
2/26/2010 – North Dakota Science Teachers Assoc. meeting, Bismarck State College
3/16/2010 – Internet2 Conference Planning Meeting – conference call
4/8/2010 – Mousumi Tahna MS Defense
4/12/2010 – William Jockheck PhD Defense
4/20/2010 – ZJETP Administrators meeting
5/6/2010 – Ben Dischinger MS Defense
5/7/2010 – William Voorhees MS Defense
6/10/2010 – NATURE students software demonstration and hands-on session
6/17/2010 – Student Orientation/Advising (also 6/18, 6/21)
6/22/2010 – Dan DeBilt MS Defense
7/6/2010 – Student Orientation/Advising (also 7/7-9)
7/12/2010 – Host Digi-Key visit
7/13/2010 – Assisted with F&A talks for NDSU CS industry/university consortium
7/13/2010 – Meet Madison Elementary Principal – Chris Triggs
8/2/2010 – Student Orientation/Advising (also 8/3, 8/23)
8/10/2010 – Plan Tech Expo regional business outreach breakfast
8/31/2010 – Meet with Development Foundation fundraising staff – Andrea Jenson
9/14/2010 – MIS Steering Committee Meeting
9/22/2010 – Tech Expo regional business outreach breakfast
9/30/2010 – RCATT Listening Group #4
10/13/2010 – FORWARD Ally Training, MU Prairie
10/19/2010 – CS Dept. Staff Meeting – MU Coffee Shop
10/20/2010 – Microsoft MORE Program Presentation
10/26/2010 – North Dakota IT Education and Industry Summit – Microsoft campus
11/1/2010 – Madison Elementary Outreach Project Meeting
11/12/2010 – Three Gorges Curriculum Meeting and Lunch Discussion
11/17/2010 – CSM Emerging Leaders – Chair/Head Session (Slator, Bleier, Comez)
12/2/2010 - Microsoft MORE Program Presentation
12/9/2010 - NDSU Computer Science Industry Consortium Program Kick-off Meeting
12/15/2010 – Three Chairs Meeting with the Dean

**Gursimran Walia**

Research

- **2009 Calendar Year**
  - **Refereed Publications**


- **Presentations**

- **Graduate Student Committees on which you serve (indicate those for which you are Chair)**
  - **Yashwant Potla (Major Advisor: Dr. Jun Kong)**
iv. Unfunded Research Proposals

(Both the Proposals were rejected)

1. Source: National Science Foundation: Human-Centered Computing (NSF 09-557):
   Title: Collaborative Research: Integrating Software Engineering and Cognitive Error Models to Improve Software Quality;
   PI: Gursimran Walia (NDSU) and PI Jeffrey Carver (UA);
   Amount Requested: $217,118 over a period of three years

2. Source: National Science Foundation: CCLI - Type 2 (NSF 09-529):
   Title: Improving Computer Science Capstone Project Experiences;
   PI: Dean Knuson, Co-PI: Gursimran Walia, and Kenneth magel
   Amount Requested: $596,267 over a period of three years

• 2010 Calendar Year

i. Refereed Publications


ii. Other Publications

(Accepted for Publication in 2011)


(Technical Reports)

• Walia, G., and Carver, J. "Using Error Abstraction and Classification to Improve the Quality of Requirements: Conclusions from Family of Studies."


iii. **Presentations**


iv. **Graduate student Committees on which you serve (indicate those for which you are Chair)**

- **Ankita Sehgal (Major Advisor: Dr. Jun Kong)**
- **Manu Bhogadi (Major Advisor: Dr. Kendall Nygard)**
- **Haribabu Bavanari (Major Advisor: Dr. Kendall Nygard)**
- **Dan Debilt (Major Advisor: Dr. Kenneth Magel)**
- **Vijay Anand Suravarapu (Major Advisor: Dr. Kendall Nygard)**
- **Mayukh Sharma (Major Advisor: Dr. Kendall Nygard)**
- **Sandeep Raavi (Major Advisor: Dr. Jun Kong)**

v. **Unfunded Research Proposals**

*Proposal Currently Under Consideration:*

Source: National Science Foundation: Division of Computer and Communication Foundations: *Software and Hardware Foundations:*

Title: **Collaborative Research: Integrating Software Engineering and Cognitive Error Models to Improve Software Quality;**

PI: **Gursimran Walia** (NDSU) and PI Jeffrey Carver (UA); Amount Requested: $315,535 over a period of four years
Teaching

- Fall, 2009 (for each course give number, title, credits, number of students and indicate if it was a new preparation for you)
  - CSCI 315-01 (4525); System Analysis and Design; 3 credit; 52 students; new preparation

- Spring, 2010 (same information)
  - CSCI 783-02 (34282); Topics in Software Systems / Empirical Software Engineering; 3 credit; 9 students; new preparation

- Summer, 2010 (same information)
  - CSCI 793-05 (15021); Independent Study / Tutorial (Creative Information Technology); 3 credit; 2 students; new preparation

- Fall, 2010 (same information)
  - CSCI 315-01 (4935); System Analysis and Design; 3 credit; 44 students;
  - CSCI 783-02 (34029); Topics in Software Systems / Empirical Software Engineering; 3 credit; 1 student; new preparation (Distance Education Course)
  - CSCI 790-07 (25326); Graduate Seminar - Empirical Software Engineering; 1 credit; 9 students; new preparation
  - CSCI 793-02 (34494); Independent Study / Tutorial (Creative Information Technology); 3 credit; 1 student

Service

2009

i. For the profession (refereeing, reviewing, service on Conference Committees or journal editorships) (give activity, dates of involvement)
  - NSF review panel for CSE REU site on December 7 and December 8 at National Science Foundation Office

ii. For the College (same information)
  - University senate meeting (3:30 pm, Monday, November 2009, Memorial Union, Plains room) [filled in for Dr. Jun Kong’s Absence]

2010 (same information in the same categories)

i. For the profession (refereeing, reviewing, service on Conference Committees or journal editorships) (give activity, dates of involvement)
(SIGCSE), Conference on Innovation and Technology in Computer Science Education (ITICSE).

ii. For the Department (same information)
- Meet with Prospective Computer Science Student (Sat alongside Dr. Brian Slator).
- Review of Software Engineering PhD and Masters Comprehensive Examinations.
- Committee for Software Engineering Certification.

Changhui Yan

Research

• 2010 Calendar Year
  i. Refereed Publications
     Journal Papers (with students underlined)


Conference Proceedings (with students underlined)


ii. Presentations
   Poster Presentation


iii. Graduate student Committees on which you serve (indicate those for which you are Chair)

   Serve as Chair

   Wen Cheng
   Sarthak Ahuja
Malinda Sanjaka

Serve as Committee Member
Yang Liu
Xiaojun Xia
Vijayanand Suravarapu

- **Other Research Activities**

  Pending research proposal submitted to NSF: "Predicting 3D structure of transmembrane helix bundle". PI: Changhui Yan

- **Teaching**
  - **Spring, 2010**

    CSCI 374 Computer Organization and Architecture, 3 credits, 40 students. New preparation

  - **Summer, 2010** (same information)

  - **Fall, 2010** (same information)

    CSCI759 Computational Methods for Bioinformatics, 3 credits, 5 students. New preparation.

- **Service**
  - **2010**

    Reviewing papers for *Bioinformatics*. Oct 15, 2010 and April 14, 2010

**Weiyi Zhang**

- **Research**
  - **2009 Calendar Year**
    - **Refereed Publications**
      1) Weiyi Zhang, Jun Kong, Kendall Nygard and Ming Li; Adaptive Design of Pervasive Computing System under QoS Constraints; *International Journal of Computers and Applications*; Accepted for publication.

      2) Jian Tang, Guoliang Xue, and Weiyi Zhang; Cross-layer optimization for end-to-end rate allocation in multi-radio wireless mesh networks; *ACM Wireless Networks (WINET)*; Vol. 15, Issue 1, January 2009, pp. 53-64.

4) Weiyi Zhang, Jun Kong, Kendall Nygard and Ming Li; Adaptive Configuration of Pervasive Computing System with QoS Consideration; *IEEE CCNC’2009*.


6) Li Zhang, Jian Tang and Weiyi Zhang; Strong Barrier Coverage with Directional Sensors; *IEEE Globecom’2009*.

7) Weiyi Zhang and Jun Kong; Distraction-free Service in Pervasive Environments Based on Multi-Constrained QoS Routing; *IEEE NISS’2009*.

8) Weiyi Zhang, Jian Tang, Chonggang Wang, and Shanaka de Soysa; Reliable Adaptive Multipath Provisioning with Bandwidth and Differential Delay Constraints; *IEEE INFOCOM’2010: IEEE Conference on Computer Communications*; (acceptance ratio: 276 out of 1575, *17.5%*), Accepted for publication.

9) Weiyi Zhang, and Siva Vanteru; OFDMA Resource Allocation and QoS Provision in Hybrid Wireless Network; *IEEE VTC’2010: IEEE 71th Vehicular Technology Conference*; Accepted for publication.

   ii. Other Publications

   iii. Presentations

   - IEEE CCNC’2009; Jan. 9, 2009, Las Vegas, NV; Presenter
   - IEEE GLOBECOM’2009, 3 Dec., 2009, Honolulu, HI; Session chair, presenter
   - IEEE ICC’2009, 15 Jun., Dresden, Germany; Presenter

   iv. Funded Research Proposals (title, PI and co-PI’s, duration, amount, source)

   - Development of a Hybrid Wireless Network Infrastructure for Integrated Research and Education, *NSF Major Research Infrastructure (MRI) Program (09-01-2009 to 08-31-2012)*
     Amount: $198,851 ($ 109,426 at NDSU)
     PI: Xiaojing Du (Temple University), Co-PI: Weiyi Zhang, Aaron Reinholz
   - Robust Hybrid Wireless Network Coverage for Rural Public Safety, *ND NSF EPSCoR Infrastructure Improvement Programs (IIP) (07-01-2009 to 06-30-2011)*
     Amount: $82,600, PI: Weiyi Zhang

   v. Graduate Students completing for whom you were the advisor (name, degree, title of paper, date)

   vi. Graduate Student Committees on which you serve (indicate those for which you are Chair)
vii. Pending Publications
viii. Unfunded Research Proposals

1) WiMAX-based testbed for Public Safety Monitoring in Rural Areas, *NSF CNS Computing Research Infrastructure (CRI) Program*, PI: Weiyi Zhang; Co-PI: Jun Kong

2) SEAMAN: An Integrated System of Sensor Web and Mobile Ad Hoc Network for Rural Public Safety; *ND NASA EPSCoR Graduate Student Research*, PI: Weiyi Zhang


5) Effective coordination for public safety support, *NDSU Community Projects Award*, PI: Weiyi Zhang

6) Joint Hardware-Software Design of Secure & Self-Organizing Embedded Systems; *ND Federal Government Relations (FGR) Program*, PI: Kendall Nygard; Co-PI: Weiyi Zhang, Xiaojiang Du, Rajendra Katti, Chao You

7) THINKERS for Tomorrow’s Problems in Food Logistics and Security; PI: Charlene Wolf-Hall, Co-PIs: Margaret Khaitsa, Denver Tolliver, Kendall Nygard, Weiyi Zhang, etc. Funding source: *NSF IGERT*

- 2010 Calendar Year
  i. Refereed Publications

1) Weiyi Zhang, Farah Kandah, Xiaojiang Du, and Chonggang Wang; Self-protecting Networking using Dynamic p-cycle Construction within Link Capacity Constraint; *WILEY Security and Communication Networks*; Accepted for publication.


3) Weiyi Zhang and Jun Kong; Multi-Constrained QoS Routing for Distraction-free Service in Pervasive Environment; *Journal of Next Generation Information Technology*; Accepted for publication.

4) Weiyi Zhang, Farah Kandah, Chonggang Wang, and Tao Jiang; OFDMA Scheduling and QoS routing in Hybrid Wireless Network; *International Journal of Information Processing and Management*; Accepted for publication.
5) Weiyi Zhang, Farah Kandah, Chonggang Wang, H. Li; Dynamic Light Trail Routing in WDM Optical Networks; *Springer Photonic Network Communications*; Accepted for publication.

6) Weiyi Zhang, Shi Bai, Guoliang Xue, Jian Tang, and Chonggang Wang; DARP: Distance-Aware Relay Placement in WiMAX Mesh Networks; *IEEE INFOCOM'2011: IEEE Conference on Computer Communications*; (acceptance rate: 291 out of 1823; **15.96%**), Accepted for publication.

7) Benjamin Bengfort, Weiyi Zhang, and Xiaojiang Du; Efficient Resource Allocation in Hybrid Wireless Networks; *IEEE WCNC’2011: IEEE Wireless Communications and Networking Conference*.

8) Weiyi Zhang, Shi Bai, Yang Liu, and Jian Tang; Cognitive Radio Scheduling for Overwater Communications; *IEEE Globecom’2010: IEEE Global Telecommunications Conference*; Accepted for publication.


10) Farah Kandah, Weiyi Zhang, Yashaswi Singh, and Juan Li; Interference-aware Robust Wireless Mesh Network Design; *IEEE Globecom’2010: IEEE Global Telecommunications Conference*; Accepted for publication.

11) Husheng Li and Weiyi Zhang; QoS Routing in Smart Grid; *IEEE Globecom’2010: IEEE Global Telecommunications Conference*; Accepted for publication.

12) Juan Li, Weiyi Zhang, and Xiaojun Xia; Scalable Publish/Subscribe Service in Wireless Mesh Networks; *IEEE Globecom’2010: IEEE Global Telecommunications Conference*; Accepted for publication.

13) Jian Tang, Li Zhang, Richard Wolff, and Weiyi Zhang; Leveraging Cognitive Radios for Effective Communications Over Water; *IEEE SECON’2010: Seventh Annual IEEE Communications Society Conference on Sensor, Mesh, and Ad Hoc Communications and Networks (acceptance ratio: **23%**), Accepted for publication.

14) Jun Kong, Weiyi Zhang, Juan Li, and Arjun Roy; A Cross-Layer Design for Adaptive Multimodal Interfaces in Pervasive Computing; *SEKE’2010: 22nd International Conference on Software Engineering and Knowledge Engineering*; Accepted for publication.

15) Juan Li, Zonghua Zhang, and Weiyi Zhang; MobiTrust: Trust Management System in Mobile Social Computing; *IEEE TSP’2010: 3rd IEEE International Symposium on Trust, Security and Privacy for Emerging Applications*; Accepted for publication.

ii. Other Publications

iii. Presentations

- IEEE INFOCOM'2010; March 15-19, San Diego, CA; Presenter
- IEEE GLOBECOM'2010, Dec. 6 - 10, 2010, Miami, FL; presenter

iv. Funded Research Proposals (title, source, PI and co-PIs, duration, amount)

- Student Travel Support for IEEE INFOCOM'2011; NSF Division of Computer and Network Systems (CNS); Research in Networking Technology and Systems (NeTS) Program; PI: Weiyi Zhang
  Duration: 5-1-2011 to 4-30-2012, Amount: $25,000

- Resource Allocation for WiMAX-based Mesh Networks, ND NSF EPSCoR Award, (08-1-2010 to 7-31-2011),
  Amount $42,900, PI: Weiyi Zhang

- Development of a Hybrid Wireless Network Infrastructure for Integrated Research and Education, NSF Major Research Infrastructure (MRI) Program (09-01-2010 to 08-31-2012)
  Amount: $198,851 ($ 109,426 at NDSU)
  PI: Xiaojiang Du (Temple University), Co-PI: Weiyi Zhang, Aaron Reinholz

- Robust Hybrid Wireless Network Coverage for Rural Public Safety, ND NSF EPSCoR Infrastructure Improvement Programs (IIP) (07-01-2009 to 06-30-2011)
  Amount: $82,600, PI: Weiyi Zhang

v. Graduate Students completing for whom you were the advisor (name, degree, title of paper, date)

Siva Vanteru, MS, “REND: reliable and energy-efficient node-disjoint paths in wireless sensor networks”, 5/14/2010

Benjamin John Bengfort, MS, “resource and Bandwidth Allocation in Hybrid Wireless Mobile Networks”, 9/7/2010

Srikanth Goud Aakula, MS, “Design and Implementation of social networking website features”, 11/15/2010

vi. Graduate student Committees on which you serve (indicate those for which you are Chair)

Phillip Reindl, MS, 2/24/2010
Chin Lua, PhD, 4/22/2010
Mayukh Sharma, MS, 5/3/2010
William D. Voorhees, MS, 5/7/2010
vii. Pending Publications
Juan Li, Hui Wang, Qingrui, Wei Yi Zhang; MobiTrust: A Decentralized Self-management Trust System in Mobile Ad Hoc Social Computing, Concurrency and Computation: Practice and Experience; Submitted

Farah Kandah, Wei Yi Zhang, Chonggang Wang, Juan Li; Diverse Path Routing with Interference and Reusability Consideration in Wireless Mesh Networks, Springer Mobile Networks and Applications; Submitted

Jun Kong; Weiyi Zhang; Nan Yu; Xiaojun Xia; Design of Human-Centric Adaptive Multimodal Interfaces, International Journal of Human-Computer Studies; Submitted

Shen Wan, Jian Tang, Brendan Mumey, Richard S. Wolff and Wei Yi Zhang; Leveraging Multi-User Diversity, Channel Diversity and Spatial Reuse for Efficient Scheduling in Wireless Relay Networks; Eighth Annual IEEE Communications Society Conference on Sensor, Mesh, and Ad Hoc Communications and Networks (IEEE SECON'2011); Submitted

Yun Li, Nan Yu, Wei Yi Zhang, Weiliang Zhao, Xiaohu You, Mahmoud Daneshmand; Enhancing the Performance of LEACH Protocol in Wireless Sensor Networks; IEEE INFOCOM 2011 Workshop on M2MCN-2011; Submitted


Yang Liu, Shi Bai, Wei-Yi Zhang, Jun Zhang, Low-cost Application Image Distribution on Worldwide Cloud Front Server, IEEE INFOCOM 2011 Workshop on Cloud Computing; Submitted

viii. Unfunded Research Proposals
1. Relay Placement and Resource Allocation for WiMAX-based Mesh Networks; NSF Division of Computer and Network Systems (CNS); Research in Networking Technology and Systems (NeTS) Program; PI: Wei Yi Zhang

2. CPS:Small:Collaborative Research:Towards QoS Routing in Smart Grids; NSF Division of Electrical, Communications and Cyber Systems (EECS); Cyber-Physical Systems (CPS); PI: Wei Yi Zhang
3. Human-Centric Adaptive Multimodal Interface Design in the Pervasive Environment; *NSF Division of Information & Intelligent Systems (IIS); Human-Centered Computing (HCC) Program*; PI: Jun Kong; Co-PI: Weiyi Zhang

4. Robust WiMAX-based Testbed for Public Safety Monitoring; *NSF Division of Computer and Network Systems (CNS); Major Research Instrumentation (MRI) Program*; PI: Weiyi Zhang; Co-PI: Dean Knudson; Jun Kong; Kendall Nygard


7. Cross-layer Design for Rural Public Safety Coverage using Hybrid Sensor Web Networks; *NASA EPSCoR Seed Award*; PI: Weiyi Zhang

a. **Other Research Activities**

8. **Teaching**

   a. **Spring, 2009** (for each course give number, title, credits, number of students and indicate if it was a new preparation for you)

      - CSci 476: Computer Forensics, 3 credits, *(new preparation)*
        Number of student: 14; Instructor rating: 4.250

      - CSci 676: Computer Forensics, 3 credits, *(new preparation)*
        Number of student: 10; Instructor rating: 4.625

      - CSci 785: Wireless Network and Mobile Computing, 3 credits
        Number of student: 13; Instructor rating: 5.000

   b. **Summer, 2009** *(same information)*

   c. **Fall, 2009** *(same information)*

      - CSci 477: Objected-Oriented Systems, 3 credits
        Number of student: 15; Instructor rating: 4.545

      - CSci 677: Objected-Oriented Systems, 3 credits
        Number of student: 8; Instructor rating: 5.000

   d. **Spring, 2010** *(same information)*
- CSci 459: Foundations of Computer Networks, 3 credits, *(new preparation)*
  Number of student: 32; Instructor rating: 4.73

- CSci 659: Foundations of Computer Networks, 3 credits, *(new preparation)*
  Number of student: 7; Instructor rating: 5.000

  number of student: 17; Instructor rating: 4.76
  
  e. Summer, 2010 *(same information)*

  f. Fall, 2010 *(same information)*

- CSci 477: Objected-Oriented Systems, 3 credits
  Number of student: 21; Instructor rating: N/A

- CSci 677: Objected-Oriented Systems, 3 credits
  Number of student: 13; Instructor rating: N/A

9. **Service**
   a. 2009
      i. *For the profession (refereeing, reviewing, service on Conference Committees or journal editorships) (give activity, dates of involvement)*

      **Journal Reviewer:**
      IEEE/ACM Transactions on Networking
      IEEE Journal on Selected Areas in Communications;
      IEEE Transactions on Mobile Computing
      IEEE Transactions on Wireless Communications
      IEEE Transactions on Vehicular Technology
      IEEE Transactions on Circuits and Systems for Video Technology
      IEEE Communications Letters
      IEEE Signal Processing Letters
      OSA Journal of Optical Networking
      Elsevier Journal of Computer Networks
      Elsevier Journal of Adhoc Networks
      Wiley Journal of Wireless Communications and Mobile Computing
      Springer Journal of Mobile Networks and Applications
      EURASIP Journal on Wireless Communications and Networking
Conference Organizations:

TPC Chair of International Workshop on Pervasive Computing Systems and Infrastructures (PCSI’2009), Washington DC, April 6-8, 2009.


Publicity Chair of IEEE WoWMoM Workshop on Autonomic and Opportunistic Communications, (AOC’2010), Montreal, Canada, June 2010.


ii. For the University (give activity, dates of involvement, and whether or not you held an office)

iii. For the College (same information)

iv. For the Department (same information)

- Chair, Course Fee Committee
- Committee Member, Faculty Recruiting Committee
- Committee Member, Teaching Free Semester Committee

b. 2010 (same information in the same categories)

i. For the profession (refereeing, reviewing, service on Conference Committees or journal editorships) (give activity, dates of involvement)

    Journal Editorship

Associate Editors-in-Chief: International Journal of Information Processing and Management

Associate Editor: WILEY’s Security and Communication Networks Journal

Editor: International Journal of Intelligent Information Processing

Editor: International Journal of Digital Content Technology and its Applications

    Journal Reviewer:

IEEE Transactions on Mobile Computing
IEEE Transactions on Wireless Communications
IEEE Transactions on Vehicular Technology
Elsevier Journal of Computer Networks
Wiley Journal of Wireless Communications and Mobile Computing
Conference Organizations:

Student Travel Grants Co-Chair: IEEE INFOCOM'2011, Shanghai, China, April 10-15, 2011.

TPC Co-Chair: IEEE INFOCOM Workshop on Machine-to-Machine Communications and Networking (M2MCN), Shanghai, China, April, 2011.


ii. For the Department (same information)

- Chair, Course Fee Committee

C. OUTREACH

1. Professional Service:

2010:
August:
Coordinated a special advising session for incoming international students prior to the start of classes.

October:
Graduate fair at Concordia (Dr. Slator attended)
Information fair for undecided students (at Memorial Union)

November:
Graduate Recruitment event (@NDSU)
Fall Career fair (hosted Breakfast for CS industry representatives)

February:
Microsoft MORE event session (on campus)
Spring Career Fair (hosted breakfast for CS industry representatives)
Careers in Information Technology Panel (at Memorial Union) with Career Services

March:
Rediscover U event for sophomores and undecided students at Memorial Union
Microsoft MORE event session (on campus)
Microsoft MORE program at Microsoft campus (35 undergraduate and graduate students attended; 3 faculty from NDSU)
Faculty luncheon at Microsoft campus

April:
CSM Honors Day event (Dr. Slator and Joan Krush attended among CS awardees)
Discover NDSU days

June & July:
Orientation & Registration for new/incoming students.

STARS program application (currently on hold for submission 2011-2012).
Joan Krush is a representative on the Enrollment Management Advisory Board.
Joan Krush serves as a steering committee member for the Region 6 National
Academic Advising Association (NACADA).

2. Alumni Events and other community related activities:

The Department continues to expand our efforts to reach alumni. We have a web site that we
hoped would be a resource for alumni, but it is not used very much. We created a new
Departmental Web Site which has gotten rave reviews, especially by those who remember our
previous web site.

At the urging of our College Dean, the Department started a newsletter during 2007-08. We
have received some favorable comments from alumni and hope to continue to expand on
relationships with our alumni.

The department continues to foster relations with area businesses, in particular Microsoft
Business Solutions. Four social/technical events were held in the past year at the south Fargo
campus of Microsoft.

3. Fund-raising accomplishments and other outreach activities:

We received a little over $3,500 from alumni and friends this academic year in money and
equipment. We need to do better. During the next academic year, we will make an effort to
contact successful alumni. Our goal is to increase alumni giving to $25,000 per year within five
years. Our efforts are constrained by what the NDSU Development Foundation is willing to
allow in solicitations of alumni.

4. Cooperative Education:

<table>
<thead>
<tr>
<th>Student</th>
<th>Employer</th>
<th>Job Type</th>
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<tbody>
<tr>
<td>Haribabu Bavanari</td>
<td>Saiana Technologies Edison, New Jersey</td>
<td>Full-time Coop</td>
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<tr>
<td>Satheesh Chakravathi</td>
<td>Northern Contours; Fergus Falls, MN</td>
<td>Full-time Coop</td>
</tr>
<tr>
<td>Robert Dolney</td>
<td>RTS (Restaurant Technology Services) Fargo, ND</td>
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<tr>
<td>Srinivas Guduru</td>
<td>The CE Shop</td>
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<td>Yong-Sheng Lin</td>
<td>Phoenix International – John Deere Co. Fargo, ND</td>
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<tr>
<td>Christopher Mahoo</td>
<td>RTS (Restaurant Technology Services) Fargo, ND</td>
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<td>Narendar Mandala</td>
<td>Ecliptic Technologies Fargo, ND</td>
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<tr>
<td>Srikar Pachav</td>
<td>International Association for Impact Assessment – IAIA Fargo, ND</td>
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<tr>
<td>Naresh Pillarikuppam</td>
<td>TEKsystems Edina MN</td>
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<tr>
<td>Sana Rehman</td>
<td>NAVTEQ Fargo, ND</td>
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<tr>
<td>Shaminda Samaraweera</td>
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<tr>
<td>Ranjana Sharma</td>
<td>Novel Systems Inc. Dallas, Texas</td>
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<tr>
<td>Sandeep Sikharam</td>
<td>Bolder Thinking LLC Fargo, ND</td>
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<td>Phani Tiruparthi</td>
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<tr>
<td>Vishnu Yarram</td>
<td>Prime IT &amp; Consulting Corporation Irvine, CA</td>
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**Placement Summary Spring 2011**

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<td>Muhammad Baqui</td>
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<tr>
<td>Haribabu Bavanari</td>
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<tr>
<td>Dhru Bindra</td>
<td>Novel Systems Inc. Dallas, TX</td>
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<tr>
<td>Joseph Bredahl</td>
<td>Phoenix International Corp – John Deere Co. Fargo, ND</td>
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<tr>
<td>Name</td>
<td>Company/Position</td>
<td>Location</td>
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<td>Satheesh Chakravarthi</td>
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<tr>
<td>Venkata Chintamaneni</td>
<td>International Marketing System; LTD Fargo, ND</td>
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<tr>
<td>Peymain Emamian</td>
<td>Pedigree Technologies Fargo, ND</td>
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<tr>
<td>Siva Ginjupalli</td>
<td>Vision Technologies, Inc. Cedar Park, TX</td>
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<td>Srinvas Gudur</td>
<td>The CE shop Fargo, ND</td>
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<tr>
<td>Akanksha Jaidev</td>
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<tr>
<td>Arti Katiyar</td>
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<tr>
<td>Aditi Mohpal</td>
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<tr>
<td>Aditya Mohpal</td>
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<td>Critical Room Control Minneapolis, MN</td>
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<tr>
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<td>Uy Thic Huyhn</td>
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<td>Bryan Phelps</td>
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<td>Wesley Rogers</td>
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<td>Kevin Rusmussen</td>
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<td>Matthew Smith</td>
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<td>Joshua Tan</td>
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## Fall 2010 and Spring 2011 CoCISE Awards

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<tr>
<td>Koski</td>
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<td>Lynch</td>
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<tr>
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<tr>
<td>Andersen</td>
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<tr>
<td>Reetz</td>
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<td>Schepers</td>
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<tr>
<td>Van Dame</td>
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<tr>
<td>Pederson</td>
<td>Alex</td>
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$58,500

39 students

**D. SPECIAL INITIATIVES**

1. *Cooperation programming/Interinstitutional activities:*

We are active participants in several interdisciplinary efforts. Our faculty are significant members of the interdisciplinary graduate program in Genomics and Bioinformatics. One of our largest research groups, Use of Technology in Education, involves faculty and students from departments across this campus. Our cooperation with Electrical and Computer Engineering in offering three undergraduate courses continues well into its third decade.
2. **International activities:**

We continue to build relationships with Chinese academics. For the third straight year, Chinese faculty will visit the Department for three weeks during the summer. We were an active participant in the effort to offer academic programs for hundreds of Chinese students in Fergus Falls. We developed a proposal for a 2 and 2 twinning program with Chinese universities.

In 2009-10, we worked to solidify a cooperative 3+2 agreement with ZJETP, a Chinese university. Ken Magel and Joan Kruse prepared three detailed curriculum layouts for this proposal which were shared with the President of ZJETP and other Chinese faculty during their visit to our campus. Here is one of those three layouts:

**Computer Science Major (B.S.) – Course Plan for ZJETP transfer students**

*NEW B.S. Requirements expected Fall 2011***

-list includes coursework applicable to NDSU; includes only the ZJETP courses required to satisfy NDSU requirements. There is room for ZJETP to insert their other courses where they need them.

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<th>Cr.hrs</th>
<th>Y1 Spring</th>
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<tr>
<td>+Music</td>
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<td>Introduction to Psychology</td>
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<tr>
<td>+Pre-Calculus</td>
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<tr>
<td>Calligraphy</td>
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<td>Intro to Database Systems</td>
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<tr>
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<td>Calligraphy</td>
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<td>ZJETP: Discrete Structures II (CSCI 335: Theoretical Computer Sci)</td>
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<td>ZJETP: Computer Science I (CSCI 160: Computer Science I)</td>
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<td>+Physics I (Calculus-based, with laboratory)</td>
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<td>+Physics II (Calculus-based, with laboratory)</td>
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<tr>
<td>Calligraphy</td>
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**Transfer Courses – Applying to BS degree**

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<td>Computer Hardware, Data Communication &amp; Networking</td>
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Our existing twinning relationships with the Ansal Institute in India and with Cairo University in Egypt continue. In 2008-09, we started a graduate student exchange program with the International Institute for Information Technology in India. This program continues.

3. **Interdisciplinary activities:**

The NDSU Computer Science Department is the largest and most prominent department of its kind over a wide geographical area that includes all of North and South Dakota and much of Manitoba, Montana and Minnesota. Given the increasingly prominent role of computing and information technology in our society, it is also of high importance for the Department to grow and thrive, producing well-educated computing professionals. We believe that our graduates do leave the university well prepared and that they are competitive anywhere in the country.

The Department had thirty-three M.S. and two Ph.D. graduates during the period May 16, 2010 through May 15, 2011. Particularly notable was the presence of four of our not-yet-tenured faculty in the list of faculty advisors for these students.

4. **Economic Development Efforts:**

The Department faculty met with several companies during 2010-11. As mentioned above, Microsoft visited campus on a number of occasions, and continues to fund undergraduate and graduate scholarships and fellowships for several students. Dr. Slator, Dr. Magel, Dr. Nygard, Mrs. Krush, and Dr. Knutson attended meetings with Microsoft Business Solutions. Dr. Nygard is a member of a Greater Fargo-Moorhead Development effort to develop a technology center in this area.

The department has begun a tradition of hosting a pre-Fair breakfast for industry representatives each semester before the doors open at the Career Fair. The most recent of these was well attended and featured a short presentation on the new Industry/University Consortium initiative, spear-headed by Dr. Dean Knudson.

E. **PLANNING**

The fundamental strength of the Department lies in the rigor of its academic programs. The B.S. degree, in particular, is by far the most rigorous in the region. Although difficult, the programs are well supported by faculty and open opportunities for our graduates. Major future plans have been basically described elsewhere in the report, but are succinctly summarized as follows:
- In research and within graduate programs, strengthen and expand in network security, information assurance, bioinformatics, and software engineering. Continue to maintain excellence in core areas of computer science.
- At the undergraduate level, continue to develop a program that is a more applied alternative to the BS degree in computer science for students intending to enter the job market with a bachelor’s degree. The program would expand existing elements of software engineering and information systems.
- Improve the quality of M.S. and Ph.D. students while reducing the total number of graduate students. We hope to have 100 - 120 oncampus and 40 - 70 distance education graduate students within five years.
- Diversify funding sources and the number of faculty receiving external funding.
- Continue to foster international programs, such as the ones underway with China, Egypt and India.
- Expand departmental research funding and reputation.
- Take steps to become a designated Center of Excellence in Information Assurance and Security. This effort has been delayed due to our difficulty in retaining faculty in this area which is experiencing enormous demand.

**F. Enrollment and FTE Data**

**Student Credit Hours and FTEs Generated**

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494 Independent Study/Capstone Projects K. Magel 1 3
659 Found/Computer Networks Greg Wettstein 5 3
689 Social Implications of Comp K. Nygard 16 3
713 Software Engineering I - DCE K. Magel 8 3
714 Software Project Planning & Estimation G. Walia 15 3
714 Software Project Planning & Estimat -DCE H. Do 9 3
715 Software Requirements Defn & Anal. - DCE K. Magel 9 3
716 Software Design K. Magel 16 3
716 Software Design – DCE K. Magel 5 3
717 Software Construction T. King 17 3
718 Software Testing/Debugging - DCE K. Magel 13 3
724 Survey/Artificial Intelligence J. Li 32 3
732 Intro to Bioinformatics C. Yan 10 3
747 Software Complexity Metrics - DCE H. Do 4 3
765 Intro to Database Systems - DCE W. Perrizo 12 3
778 Computer Networks J. Li 9 3
779 Advanced Data Mining W. Perrizo 7 3
783 ST/Adv. Technology in Logistics K. Nygard 10 3
783 ST/Empirical Software Engineering G. Walia 5 3
783 ST/Information Retrieval & Web Search W. Jin 9 3
785 Adv Topics in Software Architecture W. Perrizo 4 3
785 Adv Topics in Artificial Intelligence S. Ludwig 7 3
790 Sem/Educational Media B. Slator 16 1
790 Sem/Software Engineering K. Magel 18 1
790 Sem/Data Mining in Science S. Salem 6 1
790 Sem/HCI-Preserve Computing Kong/Zhang 9 1
790 Sem/Parallel Vertical High Perform W. Perrizo 3 1
790 Sem/Semantic Web Technologies J. Li 2 1
793 IS/Optimization in Bioinformatics K. Nygard 1 3
793 IS/Distributed Systems J. Li 1 3
797 Masters Paper Staff 33 1-10
797R Masters Paper Staff 39 R
798 Master Thesis Staff 15 1-10
798R Master Thesis Staff 12 R
799 Doctoral Dissertation Staff 30 1-15
799R Doctoral Dissertation Staff 9 R
### SUMMER I SCHEDULE
2011

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### STUDENT RATING OF INSTRUCTION RESULTS 2010-2011

**FALL, 2010 and SPRING 2011**

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<td>1. Your satisfaction with the instruction in this course.</td>
<td>36.2</td>
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<td>5.7</td>
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<td>0.4</td>
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<td>2. The instructor as a teacher.</td>
<td>40.7</td>
<td>38.3</td>
<td>13.1</td>
<td>5.2</td>
<td>2.4</td>
<td>0.3</td>
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<td>37.1</td>
<td>19.7</td>
<td>5.6</td>
<td>3.4</td>
<td>0.4</td>
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<td>5.9</td>
<td>1.0</td>
<td>0.5</td>
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<td>6. Your understanding of the course content.</td>
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<td>16.3</td>
<td>3.9</td>
<td>1.7</td>
<td>0.3</td>
<td>4.087</td>
<td>0.897</td>
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<td>1. Your satisfaction with the instruction in this course.</td>
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<td>2.8</td>
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<td>2. The instructor as a teacher.</td>
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<td>13.2</td>
<td>3.0</td>
<td>2.3</td>
<td>0.2</td>
<td>4.182</td>
<td>0.952</td>
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3. The ability of the instructor to communicate effectively | 39.5 | 39.9 | 15.3 | 3.8 | 1.5 | 0.0 | 4.050 | 0.990 | 2145
4. The quality of this course | 34.2 | 39.7 | 19.1 | 4.2 | 2.6 | 0.2 | 4.037 | 0.915 | 2143
5. The fairness of procedures for grading this course. | 51.0 | 35.2 | 9.6 | 1.9 | 1.7 | 0.6 | 4.340 | 0.834 | 2139
6. Your understanding of the course content. | 30.4 | 48.0 | 15.9 | 4.0 | 1.1 | 0.6 | 4.087 | 0.897 | 2142

600 TO 700 LEVEL
1. Your satisfaction with the instruction in this course. | 58.4 | 30.0 | 8.4 | 1.3 | 1.6 | 0.3 | 4.107 | 0.945 | 2144
2. The instructor as a teacher. | 63.9 | 28.1 | 4.8 | 1.6 | 1.3 | 0.3 | 4.182 | 0.952 | 2144
3. The ability of the instructor to communicate effectively | 61.0 | 25.8 | 9.7 | 2.9 | 0.6 | 0.0 | 4.050 | 0.990 | 2145
4. The quality of this course | 56.1 | 32.9 | 8.4 | 1.9 | 0.6 | 0.0 | 4.037 | 0.915 | 2143
5. The fairness of procedures for grading this course. | 62.9 | 25.8 | 8.1 | 1.6 | 0.6 | 1.0 | 4.340 | 0.834 | 2139
6. Your understanding of the course content. | 48.4 | 37.1 | 9.0 | 3.2 | 1.9 | 0.3 | 4.087 | 0.897 | 2142

**Department Employment of graduates:**

**Fall 2010**
Graduate Teaching Assistants –

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<td>Tarun Garg</td>
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<td>Sudheer Gadiparthi</td>
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<td>Manish Singh</td>
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<td>Lisa Bender</td>
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<td>Ritika Sahni</td>
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<td>Vaibhav Anu</td>
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<td>Judi Novotny</td>
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<td>Aaron Marback</td>
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<td>Reshma Hegde</td>
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<td>Bouchaib Falah – 2 sections</td>
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<td>55 - 55</td>
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<td>Susbi Sharma</td>
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<td>Steve BouGhosn</td>
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<td>Daniel Aceituna</td>
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<td>Amanda Schwartz</td>
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<td>Adam Jacob</td>
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<td>Omar ElAriss</td>
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**Fall 2010**
Graduate Assistants (Graders/Tutors)

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<td>Debajyoti Dash</td>
<td>Sonu Sharma</td>
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<td>Kunal Singh</td>
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### Graduate Teaching Assistants – Spring 2011

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<td>Aaron Marback</td>
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<td>Reshma Hegde</td>
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<td>Omar ElAriss</td>
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### Graduate Assistants (Graders/Tutors) – Spring 2011

<table>
<thead>
<tr>
<th>Min Chen</th>
<th>Khalid Alemerien</th>
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<tr>
<td>Debajyoti Dash</td>
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<td>Rahul Puri</td>
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**GRADUATE STUDENTS 2010-2011**

**Masters Students:**

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<thead>
<tr>
<th>Aakula, Srikanth</th>
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<tr>
<td>Agarwal, Abhishek</td>
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Olson, Nathan
Pachalyapparn, Sathya
Pachva, Srikar
Padmanabhan, Ganesh
Pandey, Shivendushital
Param, Sowjanya
Paturu, Suresh
Phadke, Swapna
Piehl, Matthew
Podagatlapalli, Chaitanya
Poreddy, Sandeep
Pradeep Amar
Radermacher, Alex
Raidu, Venkata
Rehman, Sana
Sahni, Ritika
Samaraweera, Shaminda
Sambaraju, Sharath
Saxena, Kaustubh
Schaefer, Christopher
Sen, Sourya

Sharma, Ranjana
Sharma, Sonu
Sharam, Susbi
Sikharam, Sandeep
Singh, Saumya
Singh, Yashaswi
Singh, Sonal
Singh, Manish
Sundaram, Anita
Suravarapu, Vijay
Teotia, Ashish
Thapa, Birendra
Tirupathi, Phani
Tiwari, Shweta
Vaidya, Pramesh
Vanteru, Siva
Vellaswamy Chelaiah, Ganesh Kumar
Wang, Yan
Yadav, Asha
Yarram, Vishnu

SOFTWARE ENGINEERING MASTERS

Bawa, Nadeep – MSE
Perez, Paulo - MSE
Schauer, Jesse - MSE
Zeng, Lieming - MSE

Haque, Kazi – CERT

Abeyratne, Keith
Addy, Sydney
Agbee, Adodo
Anu, Vaibhav
Bhogadi, Manu
Bhowmick, Dibakar
Carlson, Ryan
Chauhan, Anuj
Chhina, Ramneet
Christeson, Eric
Dutta, Anubratta
Elhassani, Abdelhadi
Fonseka, Nilukshi
Goswami, Anurag
Gronneberg, Bethlehem

Gunderson, Karl
Jacobs, Adam
Jahan, Farzana
Katiyar, Arti
Kohli, Jyotjeev
Kunwar, Ishita
Kwete, Yannick
Limke, Jed
Minot, Scott
Mohpal, Aditi
Mohpal, Aditya
Murugaiyan, Elangovan
Nayak, Gaurav Kumar
Njos, Robby
Novotny, Judi
Pandey, Anand
Pillarikuppam, Naresh
Potla, Yaswanth
Pradhan, Basudha
Puri, Rahul
Rajendran, Senthilkumar
Roseen, Jeremy
Roy, Pallavi
Sarker, Mridula
Sathiaseelan, Anu Evelyn
Sharma, Aman
Singh, Kunal
Srichinta, Pallavi
Srivastava, Arun
Thalloj, Pramodh
Tomer, Avijeet
Wijeyaratne, Pubudu
Xia, Xiaojun

**PhD STUDENTS:**

Al-Azzam, Omar
Aljarah, Ibrahim
Al-Nimer, Loai
Bani Taan, Shadi
Bengfort, Benjamin
Borchert, Otto
Bou Ghosn, Steve
Brewer, James
Chakravarthi, Satheesh
Cheng, Wen
ElAriss, Omar
Gagneja, Kanwalinder
Ganti, Annaji
Hossain, Mohammad
Kambhampaty, Krishnan
Kandah, Farah
Konar, Prosenjit
Kotala, Pratap
Li, Qingrui
Loree, Paul
Marback, Aaron
Pikalek, Jonathan
Ranganathan, Prakash
Roudaki, Amin
Roy, Arjun
Seetan, Raed
Wu, Jiafei
Yang, Ying
Zhao, Jingjun

**SOFTWARE ENGINEERING PhD**

Aceituna, Daniel
Akour, Mohammed
Alazzam, Iyad
Alemerien, Khalid
Altahlawi, Amro
Aijarah, Ibrahim
Asgar, Talukdar
Barakat, Rahaf
Falak, Bouchaib
Kaliki, Srikanth
Lacher, Lisa
Rummelt, Richard
Salam, Tareq
Schwartz, Amanda
Computer Science Department Enrollment Data

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Graduate Degrees Awarded, 2010-2011

**Summer Semester, 2010**
- Dischinger, Benjamin
- Kondakindi, Swathi
- Loree, Paul
- Raavi, Sandeep
- Sharma, Mayukh
- Voorhees, William

**Fall Semester, 2010**
- Aakula, Srikanth Goud
- Bapanpally, Pavan
- Bengfort, Benjamin
- Bhowmick, Dibakar
Carlson, Ryan  MS, SE  
Debilt, Dan  MS, SE  
Gupta, Divya  MS, CS  
Hensley, Joel  MS, CS  
Hokanson, Guy  MS, CS  
Manori, Anshuman  MS, CS  
Mattaparthi, Harika  MS, CS  
Potla, Yaswanth  MS, CS  
Raidu, Venkata  MS, CS  
Sarkar, Mridula  MS, SE  
Samaraweera, Shaminda  MS, CS  
Suravarapu, Vijay  MS, CS  
Thalloji, Pramodh  MS, SE  
Vanteru, Siva  MS, CS  
Wang, Yan  MS, CS  

**Spring Semester, 2011**

<table>
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<th>Name</th>
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<tr>
<td>Amaran, Pradeep</td>
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<td>Annapureddy, Anupama Reddy</td>
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**H. DIVERSITY**

The Department has always had a significant international representation, particularly people of color from the Far East and the Indian sub-continent, principally in the graduate program. Recently this has extended to the undergraduate program as NDSU has started to offer twinning programs (start in China, Egypt or India and spend the last year or two years at NDSU) at the undergraduate and graduate levels. We hope to expand these programs in Egypt (with which we have a faculty-student exchange) and China within the next few years.

The Department has worked hard to improve the representation of women and other disadvantaged groups in our faculty and student body. The lack of women students is a national problem which has become a priority for the national organizations in Computer Science. Our approach has been to increase female representation on our faculty to serve as role models and mentors for female students. We have been very successful in this effort. Five of our last ten faculty hires have been women. Until recently we had five female Assistant
Professors. The first of this cadre earned tenure and promotion to Associate Professor during 2008-09.

Starting in 2008-09, the Department encouraged these female professors to try to increase the representation of women within our student population. This effort will have two components:
- Asking each female faculty member to assist with developing relationships with area high school;
- Forming a committee of female faculty to review our practices and curricula for anything which might make the programs less attractive to women than they should be. This Committee started to meet during 2009-10, but has not made a report.

We realize this is a long term effort. While it is too early to measure success, we are encouraged by our modest initial progress. We hope to expand our outreach efforts during the coming years.

Other disadvantaged groups whose representation in our programs should increase include Hispanics, Native Americans, and African Americans (domestic people of color). As mentioned above, the representation of international students of color, particularly from Asia, and especially in our graduate programs and on our faculty, is well above the national percentage of these groups in the United States population.

The Department has tried to reach out to Native Americans in North Dakota through a variety of organizations. We have had little success. We will continue to try. With the help of the National Science Foundation, the Department has formulated a more comprehensive strategy for attracting disadvantaged students.

The NDSU CoCISE (Collaborative for Scholarships in Computer, Information Sciences and Engineering) is for students majoring in Computer Science, Computer Engineering, Management Information Systems or Pre-Management Information Systems. CoCISE is a scholarship program designed to provide scholarship support and academic mentoring to talented and financially disadvantaged computer engineering, computer science, and management information systems students at NDSU. The CoCISE program is funded by a four-year grant from the National Science Foundation. The state objectives of the program include:

"Increasing the numbers of women and minority group students, particularly Native Americans, in the computer engineering, computer science, management information systems, and pre-management information systems programs.

A complete list of CoCise awards can be located above, under "Special Initiatives". This four year, $500,000 program has just entered its fourth year. We expect to apply for a new grant through this program.