

NORTH DAKOTA
STATE UNIVERSITY

SPECIAL POINTS
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- McNair Scholars
- Faculty/Staff of the department
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- International Journal on Science in Society
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- Red River Valley Statistics Conference

FACULTY &
STAFF

Dr. Rhonda Magel

Dr. Ron Degges

Dr. Indranil Ghosh

Dr. Seung Won Hyun

Dr. Volodymyr Melnykov

Mrs. Tatjana Miljkovic

Dr. Gang Shen

Dawn Halle



NORTH DAKOTA STATE UNIVERSITY

SPRING 2012

2011 Graduating Students

Bachelor of Science-Behavioral Statistics

Rebecca Schluter

Bachelor of Science-Statistics

Joseph Long

Patrick Lauinger

Certificate- Statistics

Gom Ale

Anna Glazyrina

Daniel Creswell

Arundhati Ghosh

Gretchen Kost

Doctor of Philosophy-Statistics

Ronald Degges

Daniel Conroy

Marcia Paulsen

Master of Science-Applied Statistics

Yanchun Zhao

Alfred Ndungu

Yuni Chen

Ran Fu

David Mathisen

Kishor Devkota

Jyothsnadevi Pothana

Deepti Annam

Yunli Wang

Zhuangli Wang

HP Kuang Scholarship

The Department of Statistics awarded Michael Price and Grant Spears the H.P. Kuang Scholarship. Both of the recipients are currently seniors. Michael is working on his B.S. in statistics with a major in mathematics and minor in business administration. Grant is working on his B.S. in Math/Stat. Congratulations to all awardees!

Recipients are selected by a committee in the department based on their statistics courses they have taken and GPA at NDSU.

McNair Scholars

Two of our undergraduates have received McNair Scholarships this year, Scot Jones and Deanna Schreiber-Gregory. Scot Jones is a junior at NDSU majoring in Statistics. He is currently working on research with Dr. Rhonda Magel. The research that they are doing involves investigating the factors that are significant in predicting the point spread of NBA basketball games. They are also trying to develop techniques to try and predict point spreads of future basketball games.

Deanna Schreiber-Gregory is a senior majoring in both Statistics and Psychology. She is currently working on research under the McNair Scholarship program with Dr. Michael Robinson in Psychology. Congratulations to both of these students!

Dr. Rhonda Magel
Department Chair



Dr. Ronald Degges
Assistant Professor
of Practice



Dr. Indranil Ghosh
Visiting Assistant
Professor



Dr. Seung Won Hyun
Assistant Professor



Welcome from the Chair

We have had a lot of research activity happening in our Department during this past year. Faculty and students have conducted research on sports statistics, nuclear power safety, developing new test statistics for cluster hypotheses, and also developing test statis-

tics for mixed designs. We also held the first Red River Valley Statistics Conference at NDSU last May, 2011 and another one is planned for April 18, 2012. Several of our students presented their research at this conference. The Department has also welcomed Dr. In-

dranil Ghosh as a visiting faculty member in our Department during this past year. He is a graduate from University of California – Riverside with a research area in multivariate analysis.

Dr. Ron Degges, Assistant Professor of Practice

Ronald Degges received his Ph.D. in May, 2011. His dissertation was on "Bivariate Censored Data" with Rhonda Magel serving as his advisor. Ron has since been promoted to the

rank of Assistant Professor of Practice. Ron is currently working on improving and developing future web-based courses for the Department of Statistics. He also has the responsibil-

ity of being in charge of several sections of Stat 330, Introductory Statistics. Ron will also be working on submitting portions of his Ph.D. research for publication.

Dr. Seung Won Hyun, Assistant Professor

Last year, I attended ICODOE (International Conference on Design of Experiments) 2011 conference held in University of Memphis, Tennessee. In the conference, I presented "Optimal Designs for a Probit Model with a Quadratic Term". The conference was small and focused on the area of experimental design. There were so many chances to meet all the researchers in the area, to get some advices

about my researches and to find sources for a future research. After the conference, I could develop and finish two research papers. The research papers were submitted to major statistical journals and they are currently in reviewing process.

I am having very busy spring semester. I started a joint research with Dr. Yail Kim in Department of Civil Engineering at NDSU. The research is

about comparing concrete surfaces under several weather conditions. I help him to verify his results using regression techniques. I also started a joint research with Dr. Gang Shen in our department about optimal designs to estimate the ED50 using a conditional distribution. This research is just started but we both hope that we can find some good results soon.



McNair Scholars — Above left: Scot Jones Above right: Deanna Schreiber-Gregory

Volodymyr Melnykov and Nuclear Power Safety

Dr. Volodymyr Melnykov just recently returned from his trip to the Ukraine and collecting available data on nuclear power plants in that area. He is presently analyzing the data to

determine significant factors affecting nuclear power plant safety. Dr. Melnykov also recently had an article accepted for publication in the *Journal of the American Statistical Associ-*

ation, with R. Maitra and S. Lahiri on "Bootstrapping for Significance of Compact Clusters."

Dr. Volodymyr Melnykov

Assistant Professor



Tatjana Miljkovic and Actuarial Information

Tatjana Miljkovic is the faculty advisor of the NDSU Actuarial Club. She also serves as the actuarial advisor in the Department of Statistics. The club invites guest speakers from local insurance companies to provide their perspective on Actuarial Science and work projects in this area. Two

guest speakers were recently invited to campus. One speaker was Joe Paul, FSA and vice president of Midland National Life Insurance Company. The second speaker was Jim Wynstra, FSA and vice president of Blue Cross/Blue Shield. Tatjana just had a paper appearing in the *Journal of Agri-*

cultural Science and Technology with Thein A. Maung, Cole R. Gustafson, David M. Saxowsky, and John Nowatzki. The paper was on "Market Information on Sourcing Cellulosic Feedstock for Biofuel Production in Northern Plains Region of the United States".

Mrs. Tatjana Miljkovic

Lecturer



Dr. Gang Shen, Assistant Professor

Dr. Gang Shen recently had a book review accepted for publication in *JASA* on "Multivariate Nonparametric Methods with R: An Approach Based on Spa-

tial Signs and Ranks". Dr. Shen, along with Dr. Melnykov, developed a test based on the empirical likelihood ratio method for testing hypotheses

about clustering. Their work is presently under review by a journal.

Dr. Gang Shen

Assistant Professor



Above left: Gang Shen, Keynote Speaker at the 1st Annual Red River Valley Statistical Conference. Above Right: Kyal Brandt, grad student; Fu-Chih Cheng; Volodymyr Melnykov; and John Reber, Ph.D. Graduate and Assistant Professor at Concordia; enjoying a break at the conference.

Dawn Halle

Academic Assistant



**"We all need someone who inspires us to do
better than we know how."**

Turnover Margin in Professional Football

Geoffrey Childress (M.S. graduate) and Rhonda Magel (Chair) had a paper accepted on "Examining the Outcome Effects of the Turnover Margin in Profession Football". The paper will appear in a future issue of the *Journal of Sports Science and Engineering*. A model is developed estimating the probability of a football team winning the game based on their turnover margin.

Science Café

Dr. Rhonda Magel and Michael Price, senior majoring in statistics, presented a talk on "Does Football Momentum Translate into Points?" at the science café on January 31, 2012. They also appeared on Valley News Live, WDAY TV, and Prairie Public Radio. A Super Bowl equation was developed based on game statistics that would most influence the outcome of the Super Bowl and the equation did hold up for the Super Bowl game played in February, 2012. A paper on their results on momentum in football has been submitted to a journal.



Above: Michael Price presenting at the 1st Annual Red River Valley Statistical Conference



"Success is getting
and achieving what
you want.
Happiness is
wanting and being
content with what
you get." —
Bernard Meltzer

International Journal on Science in Society

Li Cao (MS graduate), Alfred Ndungu (Ph.D. graduate student), and Rhonda Magel (Chair) worked on research on "Comparing the Durbin, Wilcoxon Signed-Ranks Test, and a Proposed Tests in a Balanced Incomplete Block Design". The work was presented by Rhonda Magel at the International Conference on Science and Society in August, 2011 which was held at the Catholic University of America in Washington, D.C. The paper was then submitted to The *International Journal of Science and Society* and accepted for publication in December, 2011.

Sports Statistics Conference Held at MIT

Two of our graduate students, Kyal Brandt and Joe Long, recently attended a conference on sports statistics held at MIT in March 2012. They found that many sports teams were employing statisticians to help them in winning games. They also found out about many apps that could be employed by statisticians during games in order to help them collect data.

Red River Valley Statistics Conference

The Department of Statistics at NDSU hosted the first Red River Valley Statistics Conference in May, 2012. Dr. Gang Shen gave the keynote address; Dr. Volodymyr Melnykov served as the conference proceedings editor; Dr. Gang Shen and Dr. Won Hyun served as session chairs; and Dr. Craig Schnell, Provost, gave the opening remarks. Dawn Halle coordinated the food and the rooms and she spent much of the day running back and forth between the Department and the conference rooms. Several students made posters on their research for the conference and others gave talks. A list of those giving talks and the titles of their talks are given below. The next Red River Valley Statistics Conference is scheduled to be held at NDSU in April, 2012.

Presenter	Title
Gang Shen	A U-test to the Isotonic Change-point Problem
Alfred Mungai Ndungu	A Nonparametric Test for the Non-decreasing Alternative in an Incomplete Block Design
David Mathisen	A Comparison of Nonparametric Test Statistics for Nondecreasing Treatment Effects Over a Mixed Model Design
Deanna Schreiber-Gregory	Comparing Over-the Counter Drug Prices and Availability Using Nonparametric Tests
Kyal Brandt	Reported Energy Intake by Weight Status, Day and Estimated Energy Requirement Among Adults: What We Eat in America NHANES 2003-2008
Tatjana Miljkovic	A Simulation Study Based on a New BIC for Detecting Change-points
Ronald Carmen Degges	Testing Umbrella Alternatives for Bivariate Censored Data
Yuni Chen	A Comparison of the Ansari-Bradley Test and the Moses Test for the Variances
Ran Fu	Proposed Nonparametric Test for a Mixed Design of Independent Samples and Paired Data
Kishor Devkota	Factors Influencing the Success of Basketball teams in NBA League
Michael Price	Scoring Trends: Momentum in Football
Deepti Annam	Factors Influencing C Sequestration in Northern Great Plains Grasslands
Zhuangli Wang	Proposed Nonparametric Test for Simple Tree Alternatives
Yunli Wang	Finding the Mass Spectrum of a Sample Placed into Liquid Solution
Shane Loeffler	Cluster Algorithm Comparison for Ellipsoidal Data
Siqian Liu	MUSIC Algorithm in Signal DOA Estimation



Above Left: Kyal Brandt Above Right: Zhuangli Wang. These 2 graduate students were presenting at the 1st Annual Red River Valley Statistical Conference.

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Department of Statistics
NDSU Dept 2770
PO Box 6050
Fargo, ND 58108-6050

NDSU

Department of Statistics

NDSU Dept 2770
1360 Bolley Drive Waldron 201
PO Box 6050
Fargo, ND 58108-6050

Phone: 701-231-7532
Fax: 701-231-8734
E-mail: ndsu.stats@ndsu.edu

Check out our website at
<http://www.ndsu.edu/statistics>

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