

## CURRICULUM VITAE

Ganapathy Mahalingam, Ph.D.

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### ACADEMIC RECORD

- Ph.D. in Architecture - University of Florida, Gainesville, Florida, USA (1989-1993)
  - M. Arch. - Iowa State University, Ames, Iowa, USA (1985-1986)
  - B. Arch. - University of Madras, Madras, India (1978-1983)
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### TEACHING EXPERIENCE

At North Dakota State University:

#### **Assistant Professor/Associate Professor/Professor**

(Fall: 1993-2023)

- Architectural Design I (ARCH 271)
- Design Theory (ARCH 326)
- Computational Methods and Tools for Sustainable Design (ARCH 394)
- Environmental Control Systems II (ARCH 451)
- Advanced Architectural Design I (Urban Design Studio) (ARCH 471)
- Advanced Architectural Design III (Digital Design Studio) (ARCH 571)
- Professional Seminar: Computer-aided architectural and environmental design/ Architecture's New Media (ARCH 589)
- History/Theory Seminar (Non-western Traditions) The Architecture of India (ARCH 721)
- Thesis Research (ARCH 763 and LA 763)
- Advanced Architectural Design (Digital Design Studio) (ARCH 771)
- Advanced Architectural Design (Robotics Studio) (ARCH 771)
- Advanced Architectural Design ([Architectural Research Studio](#)) (ARCH 771)
- Advanced Architectural Design ([Software Development Studio](#)) (ARCH 771)
- Advanced Architectural Design (Center for the Performing Arts) (ARCH 771)
- Professional Seminar: The Acoustical Experience of Spaces (ARCH 789)
- **HON 489-02 (Senior Thesis) Fall 2022**
- **HON 494-03 (Individual Study) Fall 2022**

(Spring: 1994-2024)

- Architectural Graphics (ARCH 132)
- Design Technology (ARCH 232)
- Architectural Design II (ARCH 272)

- Computational Methods and Tools for Sustainable Design (ARCH 394)
- **The Challenge of Change (University Honors Course) (HUM 491)**
- **The Politics of Progress (University Honors Course) (UNIV 491H)**
- **Aesthetics (Individual Study) (PHIL 494)**
- Advanced Architectural Design II (ARCH 472)
- Dynamic Computer-based Three-dimensional Modeling in Architecture (Individual Study) (ARCH 494)
- History/Theory Seminar: Non-western Traditions - The Architecture of India (ARCH 521/ARCH 721)
- History/Theory Seminar: Socio-cultural Issues in the Architecture of India (ARCH 528)
- History/Theory Seminar: The Development of Software Tools for the Design Professions in Developing Economies (ARCH 726)
- History/Theory Seminar: Scripting the *Vastu Shastra*: the ancient treatises on Architecture from India – a computational exploration (ARCH 721)
- Professional Topics: Architectural Tool Building (ARCH 789)
- Advanced Architectural Design IV: Design Thesis (ARCH 572)
- Design Thesis (ARCH 772)
- Professional Seminar: The *Vastu Shastra*: the ancient treatises on Architecture from India – an in-depth study (ARCH 789)
- Advanced Modeling, Rendering and Animation (Individual Study) (ARCH 793)

(Summer 1999-2021)

- Visual Literacy (EDUC-2000)
- Computer-based Modeling & Rendering (ARCH 391/491/494)
- Computational Methods and Tools for Sustainable Design (ARCH 394)

(Summer 2000)

- **European Study Tour: UK and France (ARCH 496)**

At the University of Florida:

### **Graduate Teaching Assistant**

(Fall 1989 - Spring 1993)

- Co-taught a CAD studio (LAA 3351) in the Department of Landscape Architecture.
- Taught CAD for Building Construction (BCN 4905) in the School of Building Construction.
- Taught CAD to faculty and senior students in the Department of Interior Design.
- Taught the CAD component of Planning and Design I (URP 6101) in the Department of Urban and Regional Planning.

- Taught an independent CAD course (URP 6910) in the Department of Urban and Regional Planning.

#### In India:

##### **Lecturer**

(Summer 1988)

- Lectured on "Computer applications in design and architecture" at the Summer School for Teachers of Government Polytechnics, organized by the Indian Society for Technical Education in Madras, India.

#### At Iowa State University:

##### **Instructor**

(Fall 1986 - Summer 1987)

Courses taught in the College of Design and the Department of Architecture:

- An introduction to computer applications in design (DsnS 201)
- Computer applications in architecture (Arch 334)
- Computer-aided architectural and environmental design (Arch 434)

##### **Graduate Teaching Assistant**

(Fall 1985)

- Taught freehand drawing to freshmen in the College of Design.

#### **ADMINISTRATIVE EXPERIENCE**

##### **Interim Chair (2008-2012)**

- Appointed Interim Chair of the Department of Architecture and Landscape Architecture at NDSU in November 2008. Led department successfully for 4 years. Administrative head of the department in charge of personnel, operations and budget. Responsibilities included managing the department budget, personnel decisions including hiring, recommendations for promotion and tenure, fostering alumni relations, and writing of annual and program review reports.

##### **Architecture Program Director (Fall 2002-Fall 2009, Spring 2013)**

- Program Director for the Architecture program at North Dakota State University. Responsibilities included scheduling faculty meetings, curriculum review, coordinating teaching assignments, and preparation for accreditation including the preparation of the academic program report.

**Graduate Administrative Assistant** (Spring 1986)

- Reviewed curricula of Master's degree programs in architecture at leading American universities, and Ph.D. programs in architecture and allied fields, with a view to formulating the proposed Ph.D. program in the College of Design at Iowa State University.

**CAD Laboratory Coordinator** (Fall 1986, Spring 1987, and Summer 1987)

- Coordinated the CAD laboratory in the College of Design, Iowa State University.
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**ORGANIZATIONAL EXPERIENCE**

2001-03: **President**, Association for Computer-Aided Design In Architecture ([ACADIA](#)).

ACADIA is an international network of digital design researchers and professionals. They facilitate critical investigations into the role of computation in architecture, planning, and building science, encouraging innovation in design creativity, sustainability, and education.

1992-93: **Student Senator**, University of Florida Student Government.

1991-92: **President**, Indian Students Association, University of Florida.

1988-89: **Founding Chairman** of the Madras Metro Round Table (Madras, India).

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**PROFESSIONAL EXPERIENCE**

- Consultant, [R. L. Engebretson Holding, Inc.](#), Fargo, North Dakota. (2006-2017)

Worked on converting the firm to a BIM paradigm by investigating applicable technologies in the context of real-world projects. Awarded one of the first ever grants from the National Council of Architectural Registration Boards (NCARB) for the project in 2007.

- Registered architect in India (Council of Architecture Certificate of Registration No. CA/1984/08805)

Independent practice, Madras, India (1987-89)

- Residence for Mr. & Mrs. Vijaykumar, Kodaikanal, Tamil Nadu
- Interior design of computer laboratory, Don Bosco Matriculation School, Madras.

Kharche & Associates, Madras, India (1983-85)

- Kandath Hotel, Palghat, India

- State Bank, Dindigul, Tamil Nadu
  - State Bank Guest House, Dindigul, Tamil Nadu
  - State Bank Staff Housing, Dindigul, Tamil Nadu
  - Bajaj Apartments, Madras
  - Kambar Kottam, Madras
  - Tamil University, Tanjore, Tamil Nadu
  - Tamil Nadu Legislative Assembly Building Competition
  - Enfield House, Interior Design, Madras
  - Apartment buildings, commercial complexes and residences
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## AWARDS

- Awarded the **Faculty Creativity Award** in the College of Arts, Humanities and Social Sciences at North Dakota State University for 2021.
  - Awarded the **Outstanding Teaching Award** in the College of Arts, Humanities and Social Sciences at North Dakota State University for 2020.
  - Selected as a **Faculty Fellow** in the **Nice Center** at North Dakota State University in August 2020.
  - Selected as a **Faculty Fellow** in the first cohort of Faculty Fellows of the [Challey Institute for Global Innovation and Growth](#) at North Dakota State University in November 2019.
  - **Walter B. Booth College Excellence Fund Award** from the College of Engineering & Architecture at North Dakota State University in 2001.
  - **One of the team leaders in a research team that won one of the First Annual Awards for Architectural Research presented by the *Progressive Architecture* magazine in 1994 for the project "Listening to Buildings."**
  - **Citation** from the **Secretariat of the King Fahd Award** and the International Commission for the Preservation of Islamic Cultural Heritage for the design entry in the first King Fahd Awards (1986) - an international design competition. The design has become a part of the permanent archives of the Commission at Istanbul, Turkey.
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## HONORS

- **Fellow of the Faculty Institute for Excellence in Learning**, North Dakota State University in 2001-2002.
- Awarded the **Tau Sigma Delta Faculty Award** at North Dakota State University in 2001.
- Awarded the **Student Award for Leadership and Exemplary Service** by the India Cultural and Education Center of Gainesville, Florida in 1995.
- Awarded the **John Michael Stratton Award for the Most Outstanding Member of the Student Senate** at the University of Florida in 1993.

- Awarded the **President's Annual Recognition Award for Outstanding Students** at the University of Florida in 1993.
  - Elected to **Who's Who Among Students in American Universities and Colleges** from the University of Florida in 1992.
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## RESEARCH GRANTS

1. Awarded an Undergraduate Biomedical Research grant of \$5635 from the INBRE program of the National Institute of Health in August 2022.
2. Awarded a grant of \$5000 from the Dakota Digital Academy to teach a course on the Development of an Android App for the Design Professions, March 2022.
3. Awarded a grant of \$3948 from the Gunlogson Fund of the Institute of Regional Studies to develop a publication on, The History of the East Indian Diaspora in the FM Area. 2021.
4. Awarded an ND EPSCoR STEM Research and Education grant titled, Biosensing Equipment for Responses to Built Environments, of \$9000 for the acquisition of brain-computer interface (BCI) equipment to conduct research projects in the biosensing of inhabitants of built environments, October 2019.
5. Principal Investigator, "Integrating an ArchiCAD Model with Specifications," Levi+Wong Design Associates, Boston, MA, January-April 2016.
6. Principal Investigator, "Integrating Cost Estimating in BIM," R. L. Engebretson Co., Fargo, ND, September-December 2015.
7. Principal Investigator, "A Study in the Adaptive Reuse of a Medium Sized Building in a Blighted Urban Area to Create a Vibrant Urban Node," Klai Juba Wald Architects, Las Vegas, NV, September-December 2015.
8. Principal Investigator, "A Simulation Model of Dock Bays in A Hospital," HKS, Inc., Dallas, TX, September-December 2015.
9. Principal Investigator, "Integrating an ArchiCAD Model with Cost Estimating: Development of a Workflow," Levi+Wong Design Associates, Boston, MA, September-December 2015.
10. Principal Investigator, "Methodology for Studying IEQ Impact as a Design Tool," LHB Inc., Duluth, MN, September-December 2015.
11. Principal Investigator, "e-Specs Integration of Unifomat-MasterSpec Mapping Database," R. L. Engebretson Co., Fargo, ND, February-May, 2015.
12. Principal Investigator, "Study of Wind Pressure Distribution on Skylights of Scheels Project in Billings, Montana," R. L. Engebretson Co., Fargo, ND, September-December 2014.
13. Principal Investigator, "Mapping Unifomat Assembly Codes onto MasterSpec Specification Sections," R. L. Engebretson Co., Fargo, ND, September-December 2014.
14. Principal Investigator, "Flexibility and Adaptability in Modern Office Environments," BWBR, St. Paul, MN, September-December 2014.

15. Principal Investigator, "Study in Using AnyLogic Software for the Spatial Arrangement of a Surgery and Clinic in an Ambulatory Care Center in Ogden, Utah," HKS, Inc., Dallas, TX, September-December 2014.
16. Principal Investigator, "Daylight and Energy Analysis of Groat Point Project," Kristi Hanson Architects, Palm Desert, CA, September-December 2014.
17. Principal Investigator, "Spatial Study of Alzheimer's and Dementia Patient Treatment Units to Maximize Sensor Coverage," Klai Juba Wald Architects, Las Vegas, NV, September-December 2014.
18. Principal Investigator, "Implementation of BIM Integration in Practice," R. L. Engebretson Co., Fargo, ND, January-May 2014.
19. Principal Investigator, "Integrated BIM Models," R. L. Engebretson Co., Fargo, ND, September-December 2013.
20. Principal Investigator, "Integration of LEED Performance Criteria in BIM Models," R. L. Engebretson Co., Fargo, ND, September-December 2013.
21. Principal Investigator, "Study of Collaboration in Higher Education," BWBR, St. Paul, MN, September-December 2013.
22. Principal Investigator, "Implications of Changes in the Energy Code," BWBR, St. Paul, MN, September-December 2013.
23. Principal Investigator, "Construction Scheduling of BIM Model," Kristi Hanson Architects, Palm Desert, CA, September-December 2013.
24. Awarded a grant from the Council for International Exchange of Scholars (Washington D.C., US), for the project, **Energy Efficient Design of Buildings**, (August-December 2012).
25. **Awarded a \$ 4000 National Council of Architectural Registration Boards (NCARB) grant for the Integration of Practice and Education in the Academy in 2007.**
26. Awarded a grant from the the Council for International Exchange of Scholars (Washington D.C., US), for the project, **Architecture and Disaster Management**, (August-December 2005).
27. Awarded a \$1500 Faculty International Development Grant, Office of the Provost and Vice President for Academic Affairs, North Dakota State University in 2005.
28. Awarded a \$ 3374 ND EPSCoR grant under the Faculty in Technology Transfer (FITT) program in June 1996 to develop 3D modeling software for Advanced Architecture Inc., Fargo.
29. **Principal Investigator for a \$ 16,155 PPRC Grant awarded by North Dakota State University for the project titled "Project Visual Literacy" in May 1996.**
30. **Co-Principal Investigator for a \$ 577,280 (total amount including 50% matching funds) grant awarded by the Academic Research Infrastructure Program of the National Science Foundation in August 1995 for the "Acquisition of a Networked Imaging Cluster for Characterization, Analysis and Visualization of Materials, Processes and Engineered Structures."**
31. Awarded a \$ 3500 North Dakota State University's Grant-in-Aid in May 1995, for the project, "A Computer-aided Design System for the Design of Auditoria."
32. Co-investigator along with Dr. Frank Yazdani of the Department of Civil Engineering, North Dakota State University for a \$ 2167 grant from the Standing

- Rock College, North Dakota to study the topsoil characteristics in the Standing Rock Sioux Reservation for use as a building material.
33. Awarded a \$ 1100 Iowa State University's Instructional Development Grant in May 1987, to develop a "Computer-Based Design Education System" in collaboration with Clare Cardinal-Pett and Jamie Horowitz, two other faculty members of the Department of Architecture.
  34. Principal Investigator for the University Joint Study Program conducted by auto.des.sys Inc., the makers of *form.Z* software (1996-present).
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## DISSEMINATION OF RESEARCH

### Software

- Software for the preliminary design of proscenium-type, fan-shaped and rectangular auditoriums developed using the Smalltalk programming language and the VisualWorks IDE. The system can be ported to run on Windows, Macintosh, and Linux operating systems. The software takes acoustical, visual, functional, and programmatic parameters and generates the spatial envelope of the auditorium, which can be exported in the DXF format for use in conventional CAD systems for design development.
  - An [Android app version of the Auditorium Design System](#) won a **Special Mention Award in the Architizer A+Awards international competition in 2017.**
  - [Full Windows versions of the Auditorium Design System and the Rectangular Auditorium Design System](#) were released on July 4, 2017.

### Software Released

- Mahalingam, G. (2017). Auditorium Design System (Version 1.0) [Computer Software: Windows] Fargo, North Dakota: Digital Design Solutions LLC.
- Mahalingam, G. (2017). Rectangular Auditorium Design System (Version 1.0) [Computer Software: Windows] Fargo, North Dakota: Digital Design Solutions LLC.
- Mahalingam, G. (2015). Energy Cost Calculator (Version 1.1) [Computer Software: Android App]. Fargo, North Dakota: Digital Design Solutions LLC.
- Mahalingam, G. (2015). Auditorium Design System (Version 1.0) [Computer Software: Android App] Fargo, North Dakota: Digital Design Solutions LLC.

Intellectual property transferred to the North Dakota State University Research Foundation for licensing.



- RFT-605: Calibrate: A methodology to calibrate a building by measuring the physical activity of its inhabitants using biosensing equipment. Date submitted: March 3, 2020.
- RFT-525A: Executable Access Database of Building Assembly Code Mapping onto MasterSpec Specification Sections. Date Submitted: June 10, 2016
- RFT-534: Architectural Programming Component for SketchUp. Date Submitted: May 13, 2016
- RFT-525: Mapping of Uniformat Building Assembly Codes onto MasterSpec Specification Sections. Date Submitted: March 24, 2016

### Patents Filed

- A provisional patent application titled, **SYSTEM AND METHODS FOR CALIBRATING A PHYSICAL ZONE TO INDICATE THE POTENTIAL FOR FACILITATING THE HEALTH AND/OR HEALTHY BEHAVIOR OF SUBJECTS INHABITING THE PHYSICAL ZONE USING DATA GATHERED FROM THE SUBJECTS WITH BIOSENSING EQUIPMENT**, was filed with the USPTO in July, 2023.
- A non-provisional patent application titled, **SYSTEM AND METHODS EMBODYING THE CALORIBRATE® CONCEPT AND THE CALORIBRATION RATING® PROCESS**, was filed with the USPTO in July 2023.

### Books

- [\*Oblique\*](#), Pensive Muse Books, 2024.
- [\*The Blinking Drum\*](#), Pensive Muse Books, 2024.
- [\*Bit by Brick: Computing Architectural Design\*](#), Kendall Hunt Publishing Company, 2023.
- [\*A Guide to the Design Thesis in Architecture\*](#), Kendall Hunt Publishing Company, 2022.
- [\*Ashtastambha: Eight Pillars of Hindutva for the 21<sup>st</sup> Century\*](#), Pensive Muse Books, 2018.
- [\*A Catharsis of Creative Cathexes\*](#), Pensive Muse Books, 2018.
- [\*The Ashes of Spent Affirmations\*](#), Pensive Muse Books, 2016.
- [\*Tractatus Architectus in Two Hundred Tweets\*](#), Pensive Muse Books, 2016.
- [\*A Forehead Blow: an anthology of verse\*](#), Pensive Muse Books, 2016.
- Publication for the 25th anniversary of the Peter F. McKenzie Prize titled, *"In Memoriam: Peter Francis McKenzie."* (Editing and designing the publication, published by blurb.com in 2012)
- *Architectural Research Studio*, a book compiling the research projects in the Architectural Research Studio in the fall semester of 2010 at North Dakota State University, Linus Publications, New York (editor of the volume, print-ready version completed in 2013, yet to be published).

- *Emerging Voices in Design Theory*, a book compiled from work completed as part of the Design Theory course in the fall semester of 2011 at North Dakota State University. (Editor of the volume, print-ready version completed in 2013, yet to be published)

### Books Under Preparation

- A manuscript on the fundamentals of computer-aided architectural design under preparation for Prentice-Hall, a division of Simon & Schuster.

### Blog Sites

Pensées Architecturale (a blog site for musings on Architecture in provocative chunks): [pensées architecturale \(penseesarchitecturale.blogspot.com\)](http://penseesarchitecturale.blogspot.com)

Ask the Architecture Professor (a blog site for a customized chatbot to answer questions related to Architecture): [Ask the Architecture Professor](#)

Pensive Muse (a blog promoting unique thoughts and ideas): [Pensive Muse Books | thought provoking books](#)

### Media Creations

- Architecture in Two Hundred Tweets <https://youtu.be/gX68gQ1nYT8>
- The Future of Architecture <https://youtu.be/AkMVEsIFthY>
- Algorithmic Art <https://youtu.be/IbnCVsqbSNk>
- Plexiform Poetry <https://youtu.be/Jz5csfqdXwg>
- Metaphysics in Architecture <https://youtu.be/ez5c-afKkAQ>

### Research Projects Mentored

A total of 80 research projects were mentored through the graduate Architectural Research Studio (ARCH 771: Advanced Architectural Design Studio) (2010-present). The Architectural Research Studio is a viable curricular offering in a professional, graduate, accredited curriculum in Architecture. It provides the benefits of boosting research productivity in a department, strengthening ties with architectural firms that have an alumni presence, providing career networking opportunities for graduate students, generating valuable intellectual property, fostering research careers, and adding to the knowledge base of the Architecture profession. The all-around benefits far outweigh the challenges that have to be overcome in offering this studio. The projects are archived in the Institutional Repository of the NDSU Libraries at North Dakota State University ([Architecture - Research Studio \(ndsu.edu\)](#))

## Publications

1. Article titled, Towards a Semantic Ontology: Creating meaningful Architecture from inert materials, Northern Plains Ethics Journal, Volume X, Number 1, Fall 2022.
2. Article titled, *Algorithmic Art*, published in the Gray Matters issue of the Humanities North Dakota magazine, November, 2022, Issue 11:22.
3. Paper titled, "Generating the spatial forms of auditoriums based on distributed sentence," published in the Proceedings of Meetings in Acoustics (POMA) by the Acoustical Society of America, Boston, Massachusetts, June 2017.
4. Article titled, "The Search for Intensional Form," published in The Fantastic and the Constructible, the 2008-2010 form.Z Joint Study Journal, Volume 17 of the Partnerships in Learning Series, published by auto.des.sys Inc. in 2010, pp. 99-102.
5. Article titled, "Conjectural Intersections: Conceptual design with form.Z," published in Digital Media and the Creative Process, the 2007-2008 form.Z Joint Study Journal, Volume 16 of the Partnerships in Learning Series, published by auto.des.sys Inc. in 2009, pp. 95.
6. **Book article/chapter titled, "Discovering Computational Structures," published in caadfutures 2007, edited by Andy Dong, Andrew Vande Moere and John S. Gero, Springer, Dordrecht, Netherlands, 2008, pp 129-137.**
7. Article titled, "In Formation," published in in.form, the Journal of Architecture, Design and Material Culture, University of Nebraska-Lincoln, Vol. 8, 2008.
8. Article titled, "Engaging the World of Digital Design: Perspectives for a Developing Economy," published in Indian Architect and Builder, Jasubhai Media, November 2007.
9. Article titled, "Dynamic Architectural Constructs," published in Digital Pedagogies, the form.Z Joint Study Program Report 2005-2006, Guest Editor, Murali Paranandi, published by auto.des.sys Inc. in 2007.
10. Article titled, "Forms of Performance: Explorations in a Digital Design Studio," published in the form.Z Joint Study Program Report 2004-2005, Volume 13 in the Partnerships in Learning Series, published by auto.des.sys Inc. in 2005, pp. 134-139.
11. **Paper titled, "Improving 'Objective' Digital Images with Neuronal Processing: A Computational Approach," co-authored with Dr. Rajesh Kavasseri, and published in the *International Journal of Architectural Computing* in 2004.**
12. Editorial article titled, "Model Behaviour" published in *Intelligent Build and Design Innovations* by Cornhill Publishers of the UK in 2004.
13. **Book article/chapter titled, "POCHE: Polyhedral Objects Controlled by Heteromorphic Effectors," in the book, "CAAD Futures," by Bauke de Vries, Jos van Leeuwen and Henri Achten, Kluwer Academic Publishers, Dordrecht, 2001, pp. 603-614.**

14. Article titled, "Enhanced Boundary Representation: A *Lingua Franca* For Computer-based Building Performance Simulation?" in the *ACADIA Quarterly*, published by the Association for Computer-aided Design In Architecture in 2000.
15. Article titled, "Binary Oppositions Will Computers Be Able To Design As Well As Human Designers In The Foreseeable Future," in the *ACADIA Quarterly*, published by the Association for Computer-aided Design In Architecture in 2000.
16. Article titled, "Research Challenges Facing the Field of Computer-aided Architectural Design," in the *ACADIA Quarterly*, published by the Association for Computer-aided Design In Architecture in 1999.
17. Paper titled, "Design and Construction in the Future," published in Web-based Stanford-Berkeley CE&M workshop on, "Defining a Research Agenda for AEC Process/Product Development in 2000 and Beyond," in 1999.
- 18. Paper titled, "Representing Architectural Design Using Virtual Computers," published in a special issue of *Automation in Construction* in 1998.**
- 19. Paper titled, "Object-Oriented Computer-Aided Design Systems for the Preliminary Design of Auditoria" published in the Autumn 1996 issue of the *Journal of Architecture and Planning Research*.**

#### Citations

- Research work cited in *Architectural Acoustics: Principles and Practice*, edited by William J. Cavanaugh and Joseph A. Wilkes, John Wiley & Sons, 1999, pp. 268. This book is often used as a textbook for architectural acoustics in curricula across the nation.
- Research work cited in *Envisioning Cyberspace: Designing 3D Electronic Spaces* by Peter Anders, McGraw-Hill, 1999, pp. 205.

#### Refereed International Conference Papers

- 1. Paper titled, "Acoustic Sculpting Revisited," an invited paper for a special session on Soundscapes, presented at the 178th annual conference of the Acoustical Society of America, held in San Diego, California, from December 2- 6, 2019.**
2. Paper titled, "Strategies for Tunable Indoor Soundscapes," Inter-Noise 2018, Chicago, Illinois, August 2018.
- 3. Paper titled, "Generating the spatial forms of auditoriums based on distributed sentience," invited paper for a special session on the legacy of Bertram Y. Kinzey Jr., presented at the Acoustics '17 Conference of the Acoustical Society of America, Boston, Massachusetts, June 2017.**
4. Paper titled, "Applications of Building Information Modeling (BIM) in the Design and Construction Process," published in the proceedings of the ICCCBE-XII & INCITE 2008 conference held in Beijing in October 2008. Co-authored with Dr. Zhili Gao and Dr. Tang-Hung Nguyen.

5. Paper titled, "A Case for Architectural Computing: Computing Using Architectural Constructs," published in the Proceedings of the CAADRIA 2008 conference held in Chiang Mai, Thailand in April 2008.
6. Paper titled, "Discovering Computational Structures in Architecture," published in the proceedings of the CAAD Futures 2007 conference held in Sydney in July 2007.
7. Paper titled, "A Computational Model of a Sensor Network for the Optimization and Control of Acoustical Performance Criteria in Spatial Enclosures," published in the proceedings of the annual conference of the Association for Computer Aided Architectural Design Research In Asia, CAADRIA 05, held in New Delhi, India in April 2005.
8. Paper titled, "POCHE: Polyhedral Objects Controlled by Heteromorphic Effectors," published in the proceedings of the CAAD Futures 2001 Conference held at Eindhoven, Netherlands in July 2001.
9. Paper titled, "Computing Architectural Designs Using An Architectural Programming Language," published in the proceedings of the eCAADe 2000 Conference held in Weimar, Germany in June, 2000.
10. Paper titled, "A New Algorithm for the Simulation of Sound Propagation in Spatial Enclosures," published in the proceedings of the Building Simulation 99 conference held in Kyoto, Japan in September 1999.
11. Paper titled, "The Algorithmic Auditorium," published in the proceedings of the CAADRIA 98 conference in Osaka, Japan in April 1998.
12. Paper titled "A Model for Using Object-Oriented Computing Concepts in the Development of Design Systems in Architecture" published in the pre-conference proceedings and accepted for presentation at the focus symposium on "Cooperative Environmental Design Systems" at Inter-Symp 96 held in Baden-Baden, Germany in August 1996.
13. Paper titled, "Designing Appropriate Housing: A Computer-Based Participatory Design System," co-authored with Dr. Mary Joyce Hasell, published in the proceedings of the Fourth Annual Rinker International Conference On Building Construction held at the University of Florida in August, 1993.
14. Paper titled, "The Application of the Object-Oriented Computing Paradigm in the Development of Computer-Aided Design Systems in Architecture," accepted for the symposium on "Computers in Architecture," a part of the 13th International Congress on Cybernetics held in Namur, Belgium in August, 1992.
15. Paper titled, "A Computer-Based Participatory Design System for the Creation of Affordable Housing Designs," co-authored with Dr. Mary Joyce Hasell, published in the Proceedings of the 12th International Conference of the IAPS, Socio-environmental Metamorphoses, Chalkidiki, Greece, July 1992.
16. Paper titled, "An Object-Oriented Computer-Aided Design System for the Preliminary Design of Auditoria," accepted for the conference, "Design & Decision Support Systems in Architecture and Urban Planning," held in Eindhoven, Netherlands in July 1992.

17. Paper titled, "Participatory Architectural Design Systems," published in the proceedings of the seminar, "Computers and Housing," conducted by the Association of Consulting Civil Engineers, India in June 1988.

#### Refereed National Conference Papers

1. Paper titled, "Representing Architectural Design Using a Connections-based Paradigm," published in the proceedings of the ACADIA 2003 Conference, Indianapolis, Indiana in October 2003.
2. Paper titled, "The Algorithmic Auditorium: Automating Auditorium Design," published in the proceedings of the ACSA Technology Conference 2000, held at MIT, Boston, Massachusetts in July 2000.
3. Paper titled, "A Parallel Processing Model for the Analysis and Design of Rectangular Frame Structures," published in the proceedings of the ACADIA 99 Conference, Snowbird, Utah in October 1999.
4. Paper titled, "Representing Architectural Design Using Virtual Computers," published in the proceedings of the ACADIA 97 Conference, Cincinnati, Ohio in October 1997.
5. Paper titled, "Designing Appropriate Housing: A Computer-Based Participatory Design System," co-authored with Dr. Mary Joyce Hasell, accepted for the annual conference of the Interior Design Educators Council, 1993.
6. Paper titled, "Designing the Sound Environment: Acoustic Sculpting," published in the proceedings of the ACSA Technology Conference held in San Diego, California in February 1992.

#### Refereed Research Posters

1. "Designing Architectural Education: A Conceptual Armature," accepted for the 2019 Reynolds Symposium on Education by Design at the University of Oregon, October 18-19, 2019.
2. Research poster competition winner titled, "The Algorithmic Auditorium," presented under the auspices of the Initiative for Architectural Research (IAR) at:
  - ACSA Technology Conference, Cleveland, Ohio, March 1998
  - 86<sup>th</sup> ACSA Annual Meeting, Cleveland, Ohio, March 1998
  - Research in Design Education Conference, Raleigh, North Carolina, April 1998
  - AIA Convention and Expo '98, San Francisco, California, May 1998.

#### NSF Proposals Submitted as Principal Investigator

1. NRT-IGE: Deep Dive: An Immersive Real-World Research Experience for Graduate Students in Architecture. Amount \$ 379,188, Co-PI: Dr. Upali Nanda.

2. EFRI-SEED: Modeling and Simulation of Buildings as Energy Networks to Assess their Sustainability, National Science Foundation (NSF). Amount: \$1,461,296, Co-PIs: Drs. Chiwon Lee and Sumathy Krishnan.
3. Discovering Computational Structures in Architecture, Submitted: 02/05/2007, Amount: \$369,780.00, Co-PI: Dr. Vasant Ubhaya
4. SoD-HCER: Discovering Computational Structures in Architecture, Submitted: 1/6/2006, Amount: \$180,184.00
5. Modeling the microarchitecture of the human neocortical column: A top-down approach, Submitted: 1/5/2006, Amount: \$297,437.00, Co-PI: Dr. Rajesh Kavasseri
6. Sensors: A Computational Model for the Optimization and Control of Environmental Performance Criteria in Spatial Enclosures using Sensor-Actuator Systems, Submitted: 2/26/2004, Amount: \$217,880.00
7. Coupled Neural Systems: Dynamics, Architecture and Experiments, Submitted: 1/30/2004, Amount: \$306,480.00, Co-PI: Dr. Rajesh Kavasseri
8. Project Visual Reasoning, Submitted: 6/18/2003, Amount: \$140,563.00
9. An Integrated Decision Support System for Risk Assessment of Environmental Policy Decisions in Urban Areas, Submitted: 1/15/2002, Amount: \$439,042.00
10. An Integrated Decision Support System for Risk Assessment of Environmental Policy Decisions in Urban Areas, Submitted: 12/18/2000, Amount: \$395,690.00
11. BIOCOMPLEXITY: Dynamic Cellular Automata - An Investigation of a Computational Framework to Model Biocomplexity, Submitted: 3/1/2000, Amount: \$89,349.00, Co-PI: Dr. Rajendra Katti
12. A Reconfigurable Multi-Factor Decision Support System to Identify and Assess At-risk Situations in Urban Environments, Submitted: 8/16/1999, Amount: \$396,072.00
13. A Reconfigurable Multi-Factor Decision Support System to Assess Urban Environmental Quality Based on an Urban Ecosystem Model, Submitted: 7/15/1998, Amount: \$348,042.00, Co-PIs: Dr. Carolyn Grygiel, Dr. Charles McIntyre and Dr. Richard Rathge
14. CAREER: Computational Modeling of the Built Environment, Submitted: 7/17/1997, Amount: \$302,170.00

#### Research Proposals Submitted to Other External Agencies as Principal Investigator

1. Deriving Computational Structures from Architecture, American Institute of Architects College of Fellows Latrobe Prize (2009), \$100,000.
2. A Decision Support System for the Promotion of Active Living in a Small Community, Active Living Research (2004), \$302,200; Co-Principal Investigator Angela Hansen.
3. Electronic Spreadsheets and Workbooks for Architectural Acoustics, the Theodore John Schultz Grant – For Advancement of Acoustical Education (2003), \$3000

4. Architecture + Medicine: The Next Great Partnership, Latrobe Fellowship (2003), \$100,000
5. Small-Footprint Robust Software for Energy Calculations in Building Design for use on Palm OS powered PDAs and Pocket PCs, NWACC (2003)
6. American Council of Learned Societies, Contemplative Practice Fellowships (1997-98), "The Aural Perception of Spatial Form," \$19,974
7. American Council of Learned Societies, Contemplative Practice Fellowships (1996-97), "The Aural Perception of Spatial Form: A Computer-Based Aural Inquiry of Spatial Enclosures," \$19,600
8. High-performance Applications in Visualization, StOrage and Computing (HAVOC) (1997-98), "Cluster Analysis of Large Spatial Data Sets," Co-investigator: Dr. Marepalli B. Rao, Statistics, \$46,136
9. High-performance Applications in Visualization, StOrage and Computing (HAVOC) (1997-98), "Performance analysis of a multi-modal, multi-user virtual environment with geographically displaced participants: Ehly Hall, NDSU," \$ 138,526 (high-end proposal) / \$69,621 (moderate level proposal)
10. ACSA Junior Faculty Fellowship (1996-97), "Teaching Architectural Design: Cultivating know-how in beginning design students"

#### Research Proposals Submitted Internally as Principal Investigator

1. Ozbun Economic Development Award (2009), Fostering the Development of an Information Technology Sector for the Design Professions in the State of North Dakota, \$20,000
2. ND EPSCoR (2006), Discovering Computational Structures in Architecture, \$10,380
3. NDSU Technology Fee Committee (2003), Portable Remote Video Capability for the Videoconferencing, Collaboration, and Instructional Center (VCIC), \$120,040
4. Instructional Development Grant, NDSU (1997-98), "Computer Animation/Simulation: Course Development of ECS II (ARCH 451)," \$1440
5. Planning, Priorities and Resources Committee (PPRC), NDSU (1997-98), "ProNet: A Communication Network for Students and Practitioners," \$30,450
6. The Research Development Support Program, NDSU Research Foundation (1997-98), "Computer-based Modeling of Acoustics in Spatial Enclosures," \$5000
7. The Research Development Support Program, NDSU Research Foundation (1997-98), "The Computational Modeling of Spatial Characteristics of Energy Consumption Systems at the Urban Scale," \$5000
8. Phase 0 Technology Transfer into Commercialization (TRIC) Grant Program, NDSU (1997), "A Building-based Computer-aided Architectural Design System," \$6400
9. Academic Technology Partnership, NDSU (1997), "Fundamentals of Computer-aided Design." Summer salary support.
10. Academic Technology Partnership, NDSU (1997), "Architectural Graphics." Summer salary support.



11. Technology Fee Committee, NDSU (1997), "Computer Empowerment Initiative," \$21,190
  12. Technology Fee Committee, NDSU (1997), "Project Visual Literacy," \$24,425
  13. Technology Fee Committee, NDSU (1997), "A Computer-based Collaborative Environment," \$13,246
  14. Planning, Priorities and Resources Committee (PPRC), NDSU (1996-1997), "A Computer-based Collaborative Environment," \$13,246
  15. Planning, Priorities and Resources Committee (PPRC), NDSU (1995-96), "Project Visual Literacy," \$75,429
  16. Grant-in-Aid, NDSU (1994), "An Object-oriented Computer-aided Design System for the Design of Auditoria," \$6120
  17. Grant-in-Aid, NDSU (1993), "An Object-oriented Computer-aided Design System for the Design of Interior Environments," \$9000
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## CREATIVE WORK

1. *Algorithmic Art*, an art exhibition hosted by the Flakoll Gallery in Renaissance Hall, North Dakota State University, March 28 - April 8, 2022.
2. *Plexiform Poetry*, an art exhibition hosted by the Flakoll Gallery in Renaissance Hall, North Dakota State University, March 29 - April 8, 2021.
3. *Metaphysics in Architecture*, Certificate of Merit and shortlisted in the Top 20 in the global essay competition, Metaphysics in Architecture, conducted by ARCHIOL, 2021.
4. *Ganesh Darshan*, digital artwork, exhibited at the Collect! Create! NDSU Faculty and Staff Show at the Memorial Union Gallery at NDSU, August 23-October 4, 2011.
5. Design entry for the Downtown Fargo Urban Infill Design Competition conducted by the Kilbourne Group of Fargo, North Dakota. Co-team member was Professor Michael Christenson. 2010. (Effort Distribution: Mahalingam (85%); Christenson (15%))
6. *Dreams of Corbu*, digital painting exhibited at the juried Dwell-ing exhibit in the Memorial Union Gallery at North Dakota State University, September 2009.
7. *City Lines*, design entry in the Broadway Square Design Competition held in Fargo, North Dakota in 2004.
8. *Crab Nebula Fossil*, digital painting exhibited at the NDSU Faculty Art Exhibit, Fall 2002
9. *Cotyledon*, a collection of poetry published in Carbon World IV, the North Dakota State University Literary Journal, published by the NDSU English Club and Scholars program, 2002.
10. *Ballad of Hope*, musical composition: keyboard instrumental, April 2002.
11. *Mambo*, musical composition: keyboard instrumental, April 2002.

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## PUBLIC PRESENTATIONS

1. Towards a Semantic Ontology: Creating Meaningful Architecture from Inert Materials, 2022 Northern Plains Annual Philosophy Conference, April 2, 2022.
2. Surrogate Evolution – what we waste with material culture, presented online via Zoom and Facebook as part of the SRLS seminar series of the Northern Plains Ethics Institute, September 21, 2021.
3. Towards a Philosophy for the Architecture of India – presentation at Hashtag 2021 via Zoom, hosted by the SRM Institute of Science and Technology, India, July 10, 2021.
4. Towards Hindutva: The Essence of Being a Hindu, a presentation under the auspices of the Northern Plains Ethics Institute, 12-1pm, September 10, 2019, Meadow Lark, Memorial Union, North Dakota State University.
5. Two-part presentation on, “A Way of Life: The Essence of Hinduism,” in conjunction with the Beyond Bollywood Exhibit under the auspices of the Smithsonian Institution and the Historical and Cultural Society of Clay County, at the Hjelmkomst Center in Moorhead, Minnesota, February 19 and March 19, 2019.
6. Readings on Peace from Hinduism, a presentation at the International Day of Peace celebrations, sponsored by the Baha'i Community, Center for Interfaith Projects, Presentations Sisters, and the Unitarian Universalist Church, and held at the NDSU Alumni Center of September 20, 2014.
7. **Invited presentation on Spirit...Beginning, a reflection on Hinduism at the Concordia College Chapel in Moorhead, Minnesota on April 16, 2012.**
8. **Invited panelist, along with Terry Lausch, a certified Meditation Instructor in Tibetan Buddhism, for a presentation titled, “A Dialogue Between a Hindu and a Buddhist: What does it mean to attain liberation in the traditions of Hinduism and Buddhism, and why should one seek liberation” at the Spirit Room in Fargo, North Dakota, on November 20, 2011, as part of the series hosted by the Center for Interfaith Projects.**
9. “Emerging Trends for Architectural Education in the 21st Century,” invited presentation at the Spring ND AIA Convention in Fargo, North Dakota on April 16, 2010.
10. “Economic OPPORTUNITIES: Economic Opportunities for the Fergus Falls Micropolitan Area,” invited presentation at the Fergus Falls Business Expo 2010, Minnesota, on February 24, 2010.
11. Presentation titled, "LEED'ing the Way for Sustainable and Energy Efficient Buildings: The Green Building Rating System for Homes," presented at the Marketplace for Entrepreneurs Convention in Fargo, North Dakota, January 2007.
12. Presentation titled, “Emerging Issues in CAAD: Theoretical Approaches,” at the New York AIA Annual Convention in Buffalo, New York, October 2002.

13. Presentation at the panel discussion on "Computing in Architectural Education: The Legacy of ACADIA," at the ACSA Annual Conference in New Orleans, April 2002.
  14. **Presentation on Hinduism in the "Our Neighbor's Faith" series organized by Concordia College, Moorhead, Minnesota, and broadcast on Minnesota Public Radio in November 1998.**
  15. Lecture titled, "Bit by Brick: Computing Architectural Design," presented as the Spring Faculty Lecture of the Department of Architecture & Landscape Architecture at North Dakota State University in March 1997.
  16. Lecture titled, "The Architecture of India: Multiple Threads," presented as part of the *Landscapes of India* Lecture Series at North Dakota State University in November 1996.
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## UNIVERSITY SERVICE

- **Served as the host for two Fulbright Fellows**, Professor Ravindra Deshmukh (2005-2006) and Dr. Chitrarekha Kabre (2012-2013), both from India.
  - Chair, Architecture Thesis Committee, Department of Architecture & Landscape Architecture, North Dakota State University (2014-2020)
  - Member, Research Information Technology Advisory Group, North Dakota State University, (circa 2006)
  - Faculty Advisor, NDSU Cricket Club (2004-2016)
  - Member, North Dakota State University Honors Council (circa 2000)
  - Member, Senate Executive Committee, University Senate, North Dakota State University (2000-2002)
  - Senator, University Senate, North Dakota State University (1999-2002)
  - Member, College of Engineering & Architecture Dean Search Committee (2004)
  - Chair, College of Engineering & Architecture Computer Committee, North Dakota State University (1997-2002)
  - Chair, Creative Means Committee, Department of Architecture & Landscape Architecture, North Dakota State University (2003-2008)
  - Chair, Publications Committee, Department of Architecture and Landscape Architecture (2002-2008)
  - Chair, Computer Implementation Committee, Department of Architecture & Landscape Architecture, North Dakota State University (1993-1998)
  - Chair, Education Committee, Department of Architecture & Landscape Architecture, North Dakota State University (1997-1998)
  - Chair, Supplementary Education Committee, Department of Architecture & Landscape Architecture, North Dakota State University (1995-1996)
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## PROFESSIONAL SERVICE

- Member, **National Screening Committee (NSC), Fulbright U.S. Student Program**, Creative and Performing Arts, 2022-2025
  - Member, Editorial Board, International Journal of Architectural Computing.
  - [Member, Advisory Board, Navrachana University's School for Environmental Design and Architecture \(SEDA\), Center for Heritage Research, Vadodara, Gujarat, India.](#)
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## VOLUNTEER COMMUNITY SERVICE

Indo-American Association of Great Plains (2002-2009): Founding member, office bearer, newsletter editor, web support and records maintenance.

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## ORGANIZATIONAL MEMBERSHIP

- Member, Association for Computer-Aided Design in Architecture (ACADIA)
  - Member, Association of Collegiate Schools of Architecture (ACSA)
  - Member, American Society for Engineering Education (ASEE) (2001-2003)
  - Member, Northern Plains Ethics Institute (NPEI)
  - Member of the Advisory Committee for Exhibitions, Plains Art Museum, Fargo, North Dakota. (1997-1999)
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## ENTREPRENEURSHIP

- Founded [Digital Design Solutions LLC](#), a Limited Liability Company in August 2009 in the state of North Dakota to create information technology products for the design professions. The linked web site was designed by me.
  - One of the 23 finalists out of 95 entrants in the Innovate North Dakota competition held in 2008-2009 for the business venture 'Digital Design Solutions.' Digital Design Solutions was registered as a North Dakota Limited Liability Company (LLC) in August 2009.
  - Presentation of proposal for a business to be started in North Dakota titled, "Digital Design Solutions," in the Innovate North Dakota competition finals at the IDEA Center, Bismarck, May 18, 2009. Included the development of a complete business plan and financials for the proposed business.
  - Presentation of proposal for a business to be started in North Dakota titled, "Digital Design Solutions," at the Midwest Angel and Venture Capital Conference in Fargo, North Dakota, May 2007.
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