

Deepti Joshi

Department of Computer Science and Engineering University of Nebraska-Lincoln

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EDUCATION

- **Doctor of Philosophy, Computer Science (expected in May 2011)**
Department of Computer Science and Engineering
University of Nebraska-Lincoln, Lincoln, Nebraska
Advisor: Drs. Ashok Samal and Leen-Kiat Soh
Dissertation Title: *Polygonal Spatial Clustering*
- **Master of Science in Applied Computer Science (2004 – 2006)**
Department of Computer Science/Information Systems
Northwest Missouri State University, Maryville, Missouri
Advisor: Dr. Gary McDonald
Project Title: *Biological Relational Database*
- **Master's Diploma in Computer Applications (2000 – 2004)**
DOEACC Society, Government of India, New Delhi, India
Project Title: *Human Resource Management System*
- **Bachelor of Arts in English (Honors) (1999 – 2002)**
University of Delhi, Delhi, India
- **Diploma in French (1999 – 2002)**
Alliance Française de Delhi, Delhi, India

PROFESSIONAL EXPERIENCE

Graduate Research Assistant

June 2007 – Current

**Department of Computer Science and Engineering
University of Nebraska-Lincoln, Lincoln, Nebraska**

- Currently working on an NSF funded project (**Building Knowledge Discovery and Information Fusion Tools for Collaborative Systems to Adaptively Manage Uncertain Hydrological Resources – <http://hydro.unl.edu>**) to develop novel algorithms for spatio-temporal data mining. My focus is on the study of polygonal datasets, as opposed to point datasets. We have developed a body of research in polygonal clustering with particular emphasis on: a) density-based polygonal clustering, b) constraint-based polygonal clustering, and c) spatio-temporal polygonal clustering.
- Exploring innovative applications of our algorithms in areas such as: public policy (congressional redistricting and zone designing), epidemiology (flu spread analysis), and environmental applications (watershed analysis and drought analysis).

- Participated in a NSF funded USA-China collaboration workshop organized by the University of Nebraska-Lincoln, Lincoln, Nebraska, and the Hohai University, Nanjing, China in Nanjing, China (4/12/08 through 4/15/08). The focus of the workshop was to collaboratively develop computational techniques with focus on water science and engineering. More details can be found at <http://hydro.unl.edu/Workshop.htm>
- Leading the development of a Volunteered Geographic Information (VGI) system for cataloging the hydrological resources of the world (<http://vgi.unl.edu>). Supervising and mentoring under-graduate research assistants.

Instructor

August 2006 – May 2007

Computer Science / Information Systems Department

Northwest Missouri State University Maryville, Missouri

- Taught classes at both the under-graduate and graduate level:
 - Undergraduate Classes*
 - Computer Programming I (Fall 2006 (30 students), Spring 2007(Section 1 - 30 students, Section 2 –27 students))
 - Computer Programming II (Spring 2007 (class of 14 students))
 - Management Information Systems (Fall 2006 (Section 1 –25 students, Section 2 –27 students))
 - Graduate Classes*
 - Web Services Technologies (Fall 2006 (28 students), Spring 2007 (32 students))
 - Advanced Database System (Summer 2007 (6 students))
- Served as a leader of departmental projects:
 - Department Newsletter
 - Department Website

Teaching Assistant

October 2004 – April 2006

Computer Science / Information Systems Department

Northwest Missouri State University, Maryville, Missouri

- Instructed students in Advanced Topics in Database Systems, Web services and Intelligent Systems courses
- Coordinated lab hours and study sessions to further assist students
- Graded students' projects and examinations

Office Assistant and Computer Lab Coordinator

January 2005 – April 2006

Computer Science / Information Systems Department

Northwest Missouri State University, Maryville, Missouri

- Assisted the Director of M.S. program in Computer Science in maintaining all current student records, and other recruiting activities such as communicating with the prospective students
- Maintained two computer labs serving an average of 20 students an hour
- Assisted students using the lab with computer problems and homework

PEER REVIEWED PUBLICATIONS & PRESENTATIONS

Conference

- Joshi, D., Samal, A., & Soh, L-. K. (2009). Density-Based Clustering of Polygons. *IEEE Symposium Series on Computational Intelligence and Data Mining*, (pp. 171-178). Nashville, TN.
- Joshi, D., Samal, A., & Soh, L-. K. (2009). A Dissimilarity Function for Clustering Geospatial Polygons. *17th International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL GIS 2009)*, (pp. 384-387). Seattle, WA.

- Joshi, D., Soh, L-. K., & Samal, A. (2009). Redistricting Using Heuristic-Based Polygonal Clustering. *IEEE International Conference on Data Mining*, (pp. 830-836). Miami, FL.
- Joshi, D., Samal, A., & Soh, L-. K. (2011). Treating Time as a First class Citizen. *Association of American Geographers 2011 Annual Meeting*, In Symposium on Space-Time Integration in Geography and GIScience, Seattle, USA.
- Joshi, D., Samal, A., & Soh, L-. K. (under review). Density-Based Clustering of Polygons in the Presence of Obstacles. *2011 SIAM International Conference on Data Mining*. April 2011, Arizona, USA.

Journal (Under review and preparation)

- Joshi, D., Soh, L-. K. & Samal, A. (under review). Redistricting using Constrained Polygonal Clustering, submitted to *IEEE Transactions on Knowledge and Data Engineering* in July 2010.
- Joshi, D., Samal, A., & Soh, L-. K. (under preparation), Detecting Spatio-Temporal Polygonal Clusters and their Movements, to be submitted to *International Journal of Geographical Information Science* in November 2010.
- Joshi, D., Samal, A., & Soh, L-. K. (under preparation). A Dissimilarity Function for Polygons, to be submitted to *Journal of Geographic Systems* in Decemeber 2010.
- Joshi, D., Samal, A., & Soh, L-. K. (under preparation). Polygonal Spatial clustering in the Presence of Obstacles and Facilitators, to be submitted to *International Journal of Geographical Information Science* in Januray 2011.

SERVICE

- **Reviewer**, *Conference on Theoretical and Applied Computer Science (TACS 09)*
- **Reviewer**, *The Professional Geographer*
- **Juror**, *Water for Food International Conference*, Poster Competition, Lincoln, Nebraska, May 2-5, 2010.

AWARDS AND SCHOLARSHIPS

- Graduate Research Assistantship (June 2007 – May 2011), Department of Computer Science and Engineering, University of Nebraska-Lincoln
- Graduate Assistantship (Jan 2005 – April 2006), Computer Science and Information Systems Department, Northwest Missouri State University
- Outstanding Graduate Student Award, Computer Science and Information Systems Department, Northwest Missouri State University

REFERENCES

Dr. Ashok Samal

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Dr. David B. Marx
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