

Alina Zare

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EDUCATION

Doctor of Philosophy in Computer Engineering Expected December 2008

University of Florida, Gainesville, FL

Chair: Dr. Paul Gader

Dissertation Title: *Hyperspectral Endmember Detection and Band Selection using Sparsity Promotion and the Dirichlet Process*

Bachelor of Science Cum Laude in Computer Engineering August 2003

University of Florida, Gainesville, FL

Minors: Mathematics, Business Administration

Sales Engineering Certificate Degree

EXPERIENCE

Research Assistant January 2003 - Present
Computational Science and Intelligence Lab, University of Florida, Gainesville, FL

Multi-Level Fusion of Multi-Modal Sensor Information Project November 2007 - Present

- Performed analysis, target detection, and fusion of sensor information
- Participated in project meetings with collaborators and the creation of project reports
- Composed project reports

Science of Land Target Spectral Signatures Multi-University January 2003 to May 2008
Research Initiative

- Participated Actively in Program Reviews and the Internal Reviews with MURI Collaborators
- Participated in Creating MURI's Interim and Final Reports
- Developed and Implemented a Simultaneous Sparsity Promoting Endmember Detection and Hyperspectral Band Selection Algorithm using Bayesian Methodologies
- Developed and Implemented SPICE: a Sparsity Promoting Endmember Detection Algorithm using Bayesian Methodologies and based on the Iterated Constrained Endmembers Algorithm
- Developed and Implemented a Long-Wave Infrared Vegetation Detection Algorithm for False Alarm Reduction in Landmine Detection Frameworks
- Participated in the development of a Multi-Sensor Fusion Framework for Application to Landmine Detection

Student Developer August 2002 - May 2003

Dell Corporation, Austin, TX

- Integrated Product and Process Design Program Participant at the University of Florida
- Created a Dell BIOS Test Framework for Dell's Server Line

New Media Intern August 2000 - August 2002

The Gainesville Sun, Gainesville, FL

- Maintained and Upgraded Newspaper's Website, GainesvilleSun.com
- Photographed Events and Generated Content for GainesvilleSun.com and GatorSports.com

Web Intern

May 2000 - August 2000

Road Runner, Maitland, FL

- Generated Online Content and Maintained Central Florida's Road Runner Website, Around-CentralFlorida.com
- Aided Marketing and Engineering Teams at Road Runner Central Florida

PUBLICATIONS

Peer-Reviewed Journal Articles

A. Zare, P. Gader, "Hyperspectral Band Selection and Endmember Detection Using Sparsity Promoting Priors," *IEEE Geoscience and Remote Sensing Letters*, Vol. 5, No. 2, pp. 256-260, Apr. 2008.

A. Zare, J. Bolton, P. Gader, M. Schatten, "Vegetation Mapping for Landmine Detection Using Long Wave Hyperspectral Imagery," *IEEE Transactions on Geoscience and Remote Sensing*, Vol. 46, No. 1, pp. 172-178, Jan. 2008.

A. Zare, P. Gader, "Sparsity Promoting Iterated Constrained Endmember Detection for Hyperspectral Imagery," *IEEE Geoscience and Remote Sensing Letters*, Vol. 4, No. 3, pp. 446-450, July 2007.

Conference Papers

A. Zare, P. Gader, "Endmember Detection using the Dirichlet Process," *Transactions of the International Conference on Pattern Recognition*, Dec. 2008, To Appear.

A. Zare, P. Gader, "Sparsity Promoting Iterated Constrained Endmember Detection with Integrated Band Selection," *Transactions of the IEEE Geoscience and Remote Sensing Symposium*, July 2007, pp. 4045-4048.

A. Zare, P. Gader, "SPICE: a sparsity promoting iterated constrained endmember extraction algorithm with applications to landmine detection from hyperspectral imagery," *Proceedings of SPIE*, Vol. 6553, May 2007, CID: 655319.

M. A. Schatten, P. D. Gader, J. Bolton, **A. Zare**, and A. Mendez-Vasquez; "Sensor Fusion for Airborne Landmine Detection," *Proceedings of SPIE*, Vol. 6217, May 2006, CID: 62172F.

P. Gader, A. Mendez-Vasquez, K. Chamberlin, J. Bolton, **A. Zare**; "Multi-sensor and algorithm fusion with the Choquet integral: applications to landmine detection," *Transactions of the IEEE Geoscience and Remote Sensing Symposium*, Vol. 3, 2004, pp 1603-1608.

PRESENTATIONS

Program Reviews and Research Presentations

"Stochastic Methods for Mine Detection with Hyperspectral Imagery." 11th Annual Army Landmine Detection Research Review Meeting, Hilton Springfield, Springfield, Virginia, January 29-30, 2008.

"False Alarm Reduction using Vegetation Mapping for Disturbed Soil Detection in Long Wave Hyperspectral Imagery." **Army Advanced Concept Workshop** on Disturbed Soil Characterization and Exploitation, Georgia Tech Research Institute Conference Center, Atlanta, Georgia, January 15-17, 2008.

"Laboratory Capabilities and Overview." Research Program Overview Meeting at ChemImage Corporation, Pittsburgh, Pennsylvania, September 13, 2007

"Sparsity Promoting Iterated Constrained Endmembers." Presented at the Army Research Laboratory for a Multi-University Research Initiative **Annual Program Review**, Adelphi, Maryland, November 11, 2006

“Science of Land Target Spectral Signatures: Fusion Sub-Task.” Presented at Georgia Tech University for a Multi-University Research Initiative **Program Funding Review**, Atlanta, Georgia, September 15, 2005

Conferences Presentations

“Sparsity Promoting Iterated Constrained Endmembers with Integrated Band Selection.” Presented in IEEE Geoscience and Remote Sensing Symposium 2007, Barcelona, Spain, July 26, 2007.

“SPICE: a sparsity promoting iterated constrained endmember extraction algorithm with applications to landmine detection from hyperspectral imagery.” Presented in SPIE Defense and Security Symposium 2007, Orlando, FL, April 11, 2007.

TEACHING EXPERIENCE

Instructor

June 2008 - July 2008

University of Florida, Gainesville, FL

- Course: Artificial Intelligence and Machine Learning: State-of-the-Art Applications (IDH 2931)
- Developed syllabus, course material and lectures
- Presented lectures, Graded students and Handled student questions

Teaching Assistant

August 2003 - December 2003

University of Florida, Gainesville, FL

- Course: Image Processing (CAP 4410)
- Developed and presented lectures and class activities
- Graded Students, Handled student questions

SERVICE

Program Committee Member, Special Session on Hyperspectral Imagery For Remote Sensing: Intelligent Analysis & Applications, 12th International Conference on Knowledge-Based and Intelligent Information & Engineering Systems, February 2008 - September 2008.

Reviewer, 2008 IEEE Geoscience and Remote Sensing Symposium, February 2008.

Volunteer, Provided lab tours and discussion on research for 25 high school girls from Miami, FL, SWE Outreach Program for RISE Students, February 23, 2008.

Volunteer, Panelist for engineering career panel, IG2ED: Introduce a Girl 2 Engineering Day, Over 80 middle school girls from Alachua County, FL attended, February 20, 2008.

Student Member, Graduate Affairs Committee, Department of Computer and Information Science and Engineering, University of Florida, August 2007 - May 2008.

President, ASCIE: Association of Graduate Students in Computer Information Science and Engineering, University of Florida, May 2007 - May 2008.

- Led executive board, ran meetings, organized information sessions and seminars, aided planning and running departmental events.
- Organized and planned the 2nd Bi-Annual CISE Career Development Workshop, 11 companies and over 500 students in attendance, January 2008.
- Organized and planned the 1st Bi-Annual CISE Career Development Workshop, 15 companies and nearly 400 students in attendance, October 2007.

Reviewer, IEEE Transactions on Fuzzy Systems, November 2006 - Present.

Historian, ASCIE: Association of Graduate Students in Computer Information Science & Engineering, University of Florida, July 2006 - April 2007.

- Founding officer, Participated in the creation and initial organization of the association
- Actively participated in planning and running departmental and organizational events
- Helped to develop organization's constitution

Graduate Student Council Representative, Computer and Information Science and Engineering Department's representative to the Graduate Student Council, University of Florida, February 2007 - May 2007, June 2008 - Present.

Classroom Volunteer, Gainesville High School, Gainesville, Florida, August 2005 - December 2005.

Student Member, IEEE: Institute of Electrical and Electronics Engineers.

Student Member, SWE: Society of Women Engineers.

HONORS AND AWARDS

Recipient, Scholarship awarded by the Armenian-American Cultural Society of North Central Florida, November 2007.

Recipient, Travel Grant awarded by the Computer Information Science and Engineering Department, University of Florida, Gainesville, FL, May 2007.

PROFESSIONAL DEVELOPMENT

Participant, Florida Institute for Development of Engineering Faculty, College of Engineering, University of Florida, August 2007 - Present.

Seminars included: "Obtaining an NSF CAREER Award," "Writing Proposals and Obtaining Funding," "Dealing with Troubled Students," and "An Introduction to NIH Funding"

Participant, Grant Writing Course, University of Florida, January 2007 - May 2007.