

W A E L A B D - A L M A G E E D

RESEARCH INTERESTS

Computer Vision, Mobile Robots, Medical Imaging, Sensor Networks

WORK EXPERIENCE

10/2005 – Present University of Maryland College Park, MD

Assistant Research Scientist

- DARPA's Multilingual Automatic Document Classification, Analysis and Translation (MADCAT): Researching and developing algorithms for document classification and enhancement
- ARDA's Video Analysis and Content Exploitation (VACE): Researching and developing algorithms for pedestrian and vehicle detection in stationary camera, automatic visual surveillance systems.
- ARL's Collaborative Technology Alliance (CTA)

1/2004 – 10/2005 University of Maryland College Park, MD

Research Associate

- DARPA's Video Verification of Identity (VIVID): Researching and developing algorithms for:
 - shadow detection and removal
 - human-motion analysis and verification
 - video-quality assessment
- VIVID has been granted a three-year extension.
- ARL's Collaborative Technology Alliance (CTA)
 - Researching and developing algorithms for human detection, tracking and verification
 - Lead a four-person team to developing a real-time ground-based surveillance system from moving camera platforms.
 - The project has been granted a four-year extension.

1/2003 – 12/2003 New Mexico Tech. Socorro, NM

Visiting Professor

- EE 231: Digital Design
- EE 231L: Digital Design Laboratory

1/2003 – 5/2003 University of New Mexico Albuquerque, NM

Instructor

- EECE 231: Intermediate Programming for Electrical Engineers

1/2001 – 1/2003 University of New Mexico Albuquerque, NM

Graduate Assistant

- Recitation Session Instructor for EECE 231: Intermediate Programming
- Laboratory Assistant for EECE 344: Microprocessors

9/1999 – 1/2001 University of Nevada at Reno Reno, NV

Teaching Assistant

- CS 308: Data Structures
- CS 306: Mathematics of Computer Science
- CS 326: Programming Languages: Concepts and Implementation
- CS 236: Introduction to Computer Engineering

9/1998 – 9/1999 Oasis Technologies Toronto, Canada

Software Engineer

- Development and installation of backend transaction-processing and settlement servers for financial institutions using UNIX OS.

7/1997 – 9/1998 Research and Development International Cairo, Egypt

Research Engineer

- Researched and developed software for Arabic Optical Character Recognition using continuous probability-Connected Hidden Markov Models.
- The developed algorithm alleviated the need for segmenting Arabic text prior to recognition. The algorithm performed concurrently both segmentation and recognition.

9/1995 – 9/1996 Geisum Oil Company Cairo, Egypt

Instrumentation and Control Engineer

- Maintenance and installation of control equipments for onshore and offshore oil production facilities.
- Control equipments included pneumatic, electronic and microprocessor-based equipments.

9/1994 – 9/1995 KARMOLEED Eng. and Trd. Cairo, Egypt

Software Engineer

- Designed and implemented low-cost software-hardware control systems to fully automate old factories using C language and Intel 8088 based PCs.
- Developed a quality assurance software/hardware system for refrigerators factories.
- Developed an Autocad-based system for designing and generating machine-specific embroidery drawings.

EDUCATION

2003 University of New Mexico Albuquerque, NM

Ph.D. with Distinction, Computer Engineering

- Dissertation: Active Contours using Density Estimation with Applications to MRI Segmentation and Target Tracking.

1997 Mansoura University Mansoura, Egypt

M.Sc., Computer Engineering

- Thesis: Analysis of Image Sequences for Motion Estimation

1997 Information Technology Institute Cairo, Egypt

Graduate Diploma, Software Engineering

- Project: Neural Network-Based Tension Detection and Human Relations

1994 Mansoura University Mansoura, Egypt

B.Sc., Electronics Engineering

- Project: A Software Simulation for the Local Area Networks

SERVICE***Reviewer***

- National Science Foundation, panel reviewer.
- International Journal on Computer Vision
- IEEE Transactions on Parallel and Distributed Systems
- IEEE Transactions on Systems, Man and Cybernetics, Part A: Systems and Humans
- Elsevier's Computer Vision and Image Understanding Journal
- Springer's Neural Processing Letters
- Springer's Soft Computing Journal
- Elsevier's Journal of Network and Computer Applications
- Springer's Signal, Image and Video Processing Journal
- International Journal of Automation and Control, InderScience Publishers.
- World Scientific's International Journal of Image and Graphics
- ISATED International Journal on Robotics and Automation
- ISATED Journal on Computers and Applications
- IEEE International Conference on Automatic Face and Gesture Recognition, 2006.
- IEEE Conference on Computer Vision and Pattern Recognition, 2006.
- IEEE International Conference on Advanced Information Networking and Applications, Taiwan, 2006
- International Conference on Image Analysis and Recognition, 2004--2005.
- IEEE International Conference on Image Processing, 2008--2009
- IEEE Intelligent Vehicles, 2008.
- IEEE International Conference on Intelligent Robots and Systems, 2005, 2008
- IEEE International Conference on Robotics and Automation, 2008--2009

Conference Committees

- PC member, People Detection and Tracking Workshop, in conjunction with IEEE International Conference on Robotics and Automation, 2009.
- Student Activities co-Chair, IEEE International Conference on Systems, Man and Cybernetics, 2009
- Program Committee Member, International Conference on Image Analysis and Recognition, 2006--2009.
- Program Committee Member, International Conference on Computer Vision Theory and Applications (VISAPP) 2007--2008
- Program Committee Member, 6th ACS/IEEE International Conference on Computer Systems and Applications, Qatar, 2008
- Panel Chair, International Workshop on Collaboration and Cognition in Next Generation Networks, 2008
- Chair, IEEE Workshop on Human Detection from Mobile Platforms in conjunction with IEEE International Conference on Robotics and Automation, 2008.
- Publications Chair, IEEE Symposium on Computational Intelligence in Robotics and Automation, Jacksonville, Florida, 2007
- Session Chair, International Conference on Advanced Robotics, Seattle, Washington, 2005
- Session Chair, IEEE International Conference on Systems, Man and Cybernetics, Washington D.C., 2003

PUBLICATIONS

- [1] Aly El-Osery, **Wael Abd-Almageed** and Moustafa Youssef, "Calibration-Free RF-Based Localization Algorithm for Actuator/Sensor Networks using Particle Filters," *IEEE Antennas and Propagation Magazine*, August 2006.
- [2] **Wael Abd-Almageed**, Aly El-Osery and Christopher Smith, "SLA-Based Nonparametric Expectation Maximization," Springer's *Soft Computing Journal*, vol. 10, no. 11, Sept. 2006.
- [3] **Wael Abd-Almageed**, Christopher E. Smith, "Active Deformable Models using Density Estimation," *International Journal of Image and Graphics*, Special Issue on Deformable Models for Image Analysis and Pattern Recognition, Vol. 3, No. 4, 2004.
- [4] **Wael Abd-Almageed** and Mohamed Hefeeda, "Efficient Hierarchical and Progressive Video Summarization," Submitted to the *IEEE Transactions on Multimedia*, Dec. 2008.
- [5] Mohamed Hussein and **Wael Abd-Almageed**, "Approximate Kernel Matrix Computation on GPUs for Large Scale Learning Applications," Submitted to the *International Conference on SuperComputing*, 2009.
- [6] **Wael Abd-Almageed**, Jayant Kumar and David Doermann, "Page Rule-Line Removal using Linear Subspaces in Monochromatic Handwritten Arabic Documents," Submitted to the *International Conference on Document Analysis and Recognition*, 2009.
- [7] Jayant Kumar, **Wael Abd-Almageed** and David Doermann, "Handwritten Arabic Text Zone Extraction using A Shape Codebook," Submitted to the *International Conference on Image Processing*, 2009.
- [8] Mona ElShinawy, **Wael Abd-Almageed**, Mohamed Chouikha, "Mammogram Classification Based on Tissue Type," Submitted to the *International Conference on Image Processing*, 2009.
- [9] Mohamed Farouk and **Wael Abd-Almageed**, "Gesture Recognition using Shape Clustering on Riemannian Manifolds," Submitted to the *International Conference on Image Processing*, 2009.
- [10] M. Refaey, **W. Abd-Almageed** and L. Davis, "A Logic Framework for Sports Video Summarization using Text-Based Semantic Annotation," *3rd International Workshop on Semantic Media Adaptation and Personalization*, Prague, Czech Republic, December, 2008.
- [11] **W. Abd-Almageed**, M. Agrawal, W. Seo and D. Doermann, "Document Zone Classification using Partial Least Squares and Hybrid Classifiers," *International Conference on Pattern Recognition*, Tampa, Florida, December, 2008.
- [12] Ryan Blace, Mohamed Eltoweissy and **Wael Abd-Almageed**, "Threat-Aware Clustering in Wireless Sensor Networks," *IFIP Conference on Wireless Sensors and Actor Networks*, Ottawa, Canada, 2008
- [13] Aly I. El-Osery, Sabit Ekin and **Wael Abd-Almageed**, "RF-Based Location Determination in Heterogenous Sensor Networks Using Rayleigh Fading Channel," *2nd Workshop on Mission Critical Networking*, 2008.
- [14] **Wael Abd-Almageed** and Larry Davis, "Probabilistic Feature Selection for Human Detection," *IEEE International Conference on Robotics and Automation*, Pasadena, California, May, 2008.
- [15] **Wael Abd-Almageed**, "Online, Simultaneous Shot Boundary Detection and Key Frame Extraction for Sports Videos using Rank Tracing," *IEEE Int. Conf. on Image Processing*, SanDiego, California, October, 2008.
- [16] **W. Abd-Almageed**, M. Hussein, M. Abdelkader and L. Davis, "Real-Time Human Detection and Tracking from Mobile Vehicles," *IEEE International Conference on Intelligent Transportation Systems*, 2007.
- [17] **Wael Abd-Almageed**, Mohamed Hussein and Larry Davis, "Tracking Articulating Objects from Ground Vehicles using Mixtures of Mixtures," *IEEE/RSJ International Conference on Intelligent Robots and Systems*, China, October 2006.
- [18] **Wael Abd-Almageed** and Larry Davis, "Robust Appearance Modeling for Pedestrian and Vehicle

- Tracking,” Springer’s Lecture Notes in Computer Science, 2006.
- [19] **Wael Abd-Almageed** and Larry Davis, “Density Estimation using Mixtures of Mixtures of Gaussians,” European Conference on Computer Vision, 2006.
- [20] Mohamed Hussein, **Wael Abd-Almageed**, Yang Ran and Larry Davis, “A Real-Time System for Human Detection, Tracking and Verification from a Moving Camera,” IEEE International Conference on Computer Vision Systems, 2006.
- [21] **Wael Abd-Almageed**, Brian Burns and Larry Davis, “Identifying and Segmenting Human Motion for Mobile Robot Navigation using Alignment Errors,” International Conference on Advanced Robotics, Seattle, WA. 2005.
- [22] Aly El-Osery, David Baird and **Wael Abd-Almageed**, “A Learning Automata Based Power Management for Ad-Hoc Networks,” IEEE International Conference on Systems, Man and Cybernetics, 2005.
- [23] Yang Ran, Qinfen Zheng, Isaac Weiss and Larry Davis **Wael Abd Almageed**, “Pedestrian Classification from Moving Platforms using Cyclic Motion Patterns,” IEEE International Conference on Image Processing, 2005.
- [24] **Wael Abd-Almageed**, Aly El-Osery and Christopher Smith, “A Hybrid Fuzzy-Statistical Contour Model for Magnetic Resonance Image Segmentation and Target Tracking,” *SPIE Defense and Security Symposium*, Orlando, Florida, April 2004.
- [25] Samah Ramadan, **Wael Abd-Almageed** and Christopher Smith, “Non-Intrusive Eye Detection and Tracking: A Review”, In final preparation to be submitted to *Computer Vision and Image Understanding*, Special Issue on Eye Detection and Tracking, Oct. 2003
- [26] **Wael Abd-Almageed**, Aly El-Osery, Christopher E. Smith, “Non-Parametric Expectation Maximization: A Learning Automata Approach,” Proceedings of the *IEEE International Conference on Systems, Man and Cybernetics, October 2003, Washington, DC*.
- [27] **Wael Abd-Almageed**, Christopher E. Smith and Samah Ramadan, “Kernel Snakes: A Non-parametric Active Deformable Model,” Proceedings of the *IEEE International Conference on Systems, Man and Cybernetics, October 2003, Washington, DC*.
- [28] **Wael Abd-Almageed**, Sami M. Fadali and George Bebis, “A Non-intrusive Kalman Filter-Based Tracker for Pursuit Eye Movement,” *The American Control Conference*, Alaska, May 2002.
- [29] **Wael Abd-Almageed** and Christopher E. Smith, “Mixture Models for Dynamic Statistical Pressure Snakes,” *IEEE International Conference on Pattern Recognition*, Québec City, Canada, August 2002.
- [30] **Wael Abd-Almageed** and Christopher E. Smith, “Contour Migration: Solving Object Ambiguity with Shape Space Visual Guidance,” *IEEE/RSJ International Conference Intelligent Robots and Systems*, Switzerland, September 2002.
- [31] **Wael Abd-Almageed**, Christopher E. Smith, “Hidden Markov Model for Silhouette Classification,” *World Automation Congress*, Orlando, Florida, June 2002.
- [32] Samah Ramadan, **Wael Abd-Almageed** and Christopher Smith, “Eye Tracking using Active Deformable Models,” *The III Indian Conference on Computer Vision, Graphics and Image Processing*, Ahmedabad, India, December 2002.
- [33] **Wael Abd-Almageed**, Elsayed Elkonyally and Sabry Saraya, “Walsh Transform-Based Feature Matching Algorithm,” *Proceedings of the 22nd International Conference on Statistics and Computers and its Applications*, Cairo, Egypt, 1997.
- [34] Elsayed Elkonyally, Sabry Saraya and **Wael Abd-Almageed**, “Point Feature Matching Adopting Walsh Transform,” *Proc. SPIE*, Vol. 3208, p. 74-84.

THESIS SUPERVISION / COMMITTEES

- **Mona ElShinawy**, Ph.D., Howard University, Expected 2010
- **Mohamed Hussein**, Ph.D., University of Maryland, Expected 2009

- **David Baird**, M.E., New Mexico Tech., Expected 2010

GRANTS

- **National Science Foundation:** “Context Management and Awareness for Autonomic Sensor Networks,” Pending, PI, \$500,000, 2009--2012
- **National Science Foundation:** “Integrated Model for Sustainable Development in Egypt: technology Development and Demonstration,” Pending, PI, \$3,000,000, 2009--2013
- **ARL’s Robotics Collaborative Technology Alliance:** “Probabilistic Feature Selection for Improving Human Detection Systems,” PI, \$225,000, 2007--2009
- **ARL’s Robotics Collaborative Technology Alliance:** “Human Detection and Tracking from Unmanned Ground Vehicles,” Co-PI, \$568,000, 2006--2009
- Project Title: “Developing a Generic Hidden Markov Model Matlab/C Library for Signal and Image Processing Research.”
Funded by: The University of New Mexico NASA-PURSUE Center.
Grant Amount: \$3650 for Spring 2002
- Project Title: “Face Segmentation and Recognition using Mixtures of Gaussians”
Funded by: The University of New Mexico NASA-PURSUE Center.
Grant Amount: \$3650 for Summer 2001.

AWARDS AND RECOGNITION

- **2007 Who’s Who in America**
- **Best Technical Performance**, DARPA Video Verification and Identification (VIVID) Project, Spiral II, July 2004
- **Outstanding Graduate Student**, Department of Electrical and Computer Engineering, University of New Mexico, Fall 2003.
- **Best Speaker**, 2002 American Control Conference.
- 9-month full-time scholarship for a graduate diploma in software engineering from the Information and Decision Support Center, Egyptian Cabinet, which is awarded to the **distinguished graduates** from Egyptian universities.

INVITED TALKS

- *Active Contour-Based Framework for Tracking and Segmentation*, University of Maryland at College Park, November 2003.
- *Recent Advances in Active Contour Models*, New Mexico Institute of Mining and Technology, November 2002.

PROFESSIONAL MEMBERSHIPS

Institute of Electrical and Electronics Engineers (IEEE)

REFERENCES

Larry S. Davis, Professor

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