

Raquel A. Romano
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Interests

Multidimensional data analysis, machine learning, statistical modeling, pattern recognition, visual analytics.

Education

Massachusetts Institute of Technology Cambridge, MA
Doctor of Philosophy in Computer Science June 2002
Ph.D. Thesis: Projective Minimal Analysis of Camera Geometry. AT&T Laboratories Fellow. Thesis supervisors: Professor W.E.L. Grimson and Professor O.D. Faugeras. Automatic understanding of rigid 3D motion in multiple images using projective, multiple view, geometric models.

Massachusetts Institute of Technology Cambridge, MA
Master of Science in Computer Science August 1995
M.S. Thesis: Real-Time Face Verification. Thesis supervisor: Professor T.A. Poggio. Fast verification of human identity from a single face image via template matching.

Harvard University Cambridge, MA
Bachelor of Arts in Mathematics June 1992
Cum Laude General Studies. Radcliffe College National Scholar. National Merit Scholar. Study Abroad: Budapest Semesters in Mathematics, Budapest, Hungary.

Experience

Lawrence Berkeley National Laboratories Berkeley, CA
Visualization Group
Post-doctoral Research Fellow March 2005-present
Research and development in the application of statistical machine learning algorithms to the analysis of scientific data from microscopy imagery, astronomical observations, climate modeling simulations. Close work with application scientists to build machine learning capabilities into scientific data analysis pipelines in order to extract information from large data sets.

Lawrence Berkeley National Laboratories Berkeley, CA
Imaging and Informatics Group
Post-doctoral Research Fellow January 2004-March 2005
Built a multi-platform biological statistical and image analysis software tool to automatically quantify the expressions of proteins and structures in images of irradiated cells. Communicated regularly with user group of cancer researchers to continually improve application's features and functionality. Application written in C++ with Qt interface is currently used by researchers to analyze large quantities of microscopy data for scientific discovery.

TECHsperience Oakland, CA
IT Consultant 2002-2003
Project manager and lead developer for web-based, object-oriented databases for nonprofit organizations. Designed, implemented, and led developers in adopting a model-view-controller architecture for Java-based web applications. Managed flow of both technical and content-related information among development team and clients.

MIT Artificial Intelligence Laboratory
Research Assistant

Cambridge, MA
1996-2002

Developed a novel projective model to constrain matching image points in multiple 2D views 3D scenes. Designed and implemented nonlinear algorithms to demonstrate accurate estimation of 3D camera poses from sparse correspondences. Collaborative research in statistical video analysis, camera self-calibration, and recovery of 3D structure and motion.
Advisors: Professor Eric Grimson and Professor Olivier Faugeras.

MIT Artificial Intelligence Laboratory
Research Assistant

Cambridge, MA
1993-1995

Built a real-time face verification system to authenticate users by matching image-based features from captured face images to a library of known face images.
Advisor: Tomaso Poggio.

INRIA: French National Institute for Research in
Computer Science, ROBOTVIS
Research Assistant

Sophia-Antipolis, France
June 1999

Developed continuous, differential models of 3-view projective constraints on matching image points in image sequences.

IBM T.J. Watson Research Center
Research Assistant

Yorktown Heights, NY
Summer 1996

Designed methods to merge fingerprint recognition models with image-based face models using subspace projections to reduce feature space dimensionality. Demonstrated improved person identification using multiple biometric measurements.

AT&T Bell Laboratories
Research Assistant

Murray Hill, NJ
Summer 1993

Analyzed search space and convergence properties of random, greedy algorithms for solving NP-complete problems.

Publications

Supernova Recognition using Support Vector Machines, R. Romano, C. Aragon, and C. Ding, International Conference of Machine Learning Applications , December 14-16, 2006.

Monitoring Activities from Multiple Video Streams: Establishing a Common Coordinate Frame, L. Lee, R. Romano, and G. Stein, IEEE Transactions on Pattern Recognition and Machine Intelligence, Special Section on Video Surveillance and Monitoring, Vol. 22, No. 8, August 2000.

Using Adaptive Tracking to Classify and Monitor Activities in a Site, W.E.L. Grimson, L. Lee, R. Romano, and C. Stauffer, Proceedings of Computer Vision and Pattern Recognition, 1998, pp.22-31.

Face Verification for Real-time Applications, R. Romano, D. Beymer, and T. Poggio, Proceedings of Image Understanding Workshop, Vol. 1, Palm Springs, CA, February 1996, pp. 747-756.

Skills

Quantitative: Probabilistic modeling, statistical learning, numerical programming, image processing, image-based rendering, 3D scene modeling.

Languages/Platforms: C, C++, Java, Python, Matlab, IDL, Mathematica, Qt, VTK, LaTeX, Perl, JSP/ASP, SQL, Windows, Linux/UNIX.

Awards

Laboratory Directed Research and Development Grant, 2004-2007.

Luis W. Alvarez Postdoctoral Fellowship Recipient, 2003.

AT&T Laboratories Fellowship Recipient, 1993-2000.

Activities

Academic: Course Instructor, UC Berkeley, Education 198, Strategies for Success at Cal for Science, Engineering, and Math Transfer Students (2005); MIT AI Laboratory Student Seminar Series Organizer (1998); EECS Student Committee for Ph.D. Requirements (1995).

Athletic: Northern California Women's Hockey League (2004), MIT Women's Ice Hockey Club (1995-2002; co-captain, 1998-2000; co-founder of women's graduate team); Eastern Massachusetts Women's Soccer League (1996-1999); Intramural Soccer/Hockey (1993-1998).

Volunteer: Puente Project Mentor (2004-2006); Making Waves Middle School Program Math and Computer Skills Teacher (2000, 2002); Intel Computer Clubhouse Mentor, Boston Museum of Science (2001-2002); Salem State College Upward Bound Program Tutor (2001-2002).