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## RÓMER E. ROSALES

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### RESEARCH EXPERIENCE AND INTERESTS

Machine learning, probabilistic inference, graphical models, computer vision, computer graphics, data visualization, human computer interfaces, data mining (including bioinformatics and information retrieval), statistical learning models for computer graphics, cognitive science, neural networks.

### EDUCATION

- **Postdoctoral Research Fellow.** University of Toronto. Probabilistic and Statistical Inference - Artificial Intelligence Groups. Advisor: Brendan Frey 2002-
- **Ph.D. Computer Science,** Boston University, Image and Video Computing Group. 2000-2002  
**Thesis:** "Specialized Mappings Architecture, with Applications to Vision-Based Estimation of Articulated Body Pose". Advisor: Stan Sclaroff
- **M.A. Computer Science,** Boston University, Image and Video Computing Group. 1997-1999  
**Thesis:** "Improved Tracking of Multiple Humans, with Trajectory Prediction, Occlusion Modeling, and Motion Analysis". Advisor: Stan Sclaroff
- **B.Eng. Informatics Engineering,** with Highest Distinction, first in class (1<sup>st</sup>/123). 1989-1995  
Universidad Centrocidental Lisandro Alvarado (UCLA) – Venezuela

### RESEARCH AND PROFESSIONAL EXPERIENCE

- Probabilistic and Statistical Inference Lab., University of Toronto, **Postdoctoral Fellow** 2002-  
Statistical image processing and vision (de-noising, super-resolution, non-photorealistic rendering, edge detection, texture transfer/generation, etc.), machine learning for pattern recognition, probabilistic methods for clustering, generative models of affinity matrices, approximate inference in intractable models, basic work in bioinformatics
- Mitsubishi Electric Research Laboratories (MERL), **Research Intern** 1999  
Probability models with entropic priors, human body pose estimation and tracking, improvement of (body) pose trajectory given inferred Markov states (in HMM's)
- Computer Science Research Lab., Boston University, **Research Assistant** 1997-2001  
Statistical models learned from rendering synthetic computer graphics data, 3D articulated pose inference, visual tracking of humans, integration of generative and discriminative models
- Computer Science Department, Boston University, **Teaching Assistant** 1997-2000  
Vision and Graphics classes. Topics include: shape classification, structure from motion, face recognition and detection, image segmentation, physics-based computer animation and rendering, texture mapping, rendering 3D models, image mosaics, etc.  
Other classes: Theory of Compilers, Introduction to C++, Introductory and Advanced Data Structures
- CIDESA (Industrial Development and Research Center), **Software Engineer** 1994-1996  
Software analysis, database design, hardware programming
- Univ. Centrocidental Lisandro Alvarado, Informatics Lab. **Laboratory Assistant** 1993-1995  
Systems design and programming, tutoring

## TEACHING EXPERIENCE

- Co-advisor for PhD. Student (learning/vision). University of Toronto 2002-
- Advisor for UROP undergraduate research project: 3D body-pose synthesis. Boston University 2001
- TA for graduate Advanced Computer Graphics. Boston University 1999
- TA for graduate/undergraduate Introduction to Computer Graphics. Boston University 1999
- Private calculus tutor 1999
- TA for graduate Computer Vision. Computer Science. Boston University 1998
- TA for graduate Theory of Compilers. Computer Science. Boston University 1998
- Laboratory lecturer for undergraduate introductory and advanced levels of several Data Structures and C++ classes. MET College. Boston University 1998-2001
- Tutorial lecturer for several advanced programming languages. UCLA Venezuela 1994-1995
- Lecturer: recitations for full-sized undergraduate classes in Statistics and Calculus. UCLA Venezuela 1991-1992

## AWARDS AND FELLOWSHIPS

- University of Toronto. Elect./Comp. Engineering Postdoctoral Fellowship, Canada 2002-2004
- Neural Information Processing Systems (*NIPS*) Travel Award. Denver, CO, USA 2000
- Computer Science Research Scholarship, Boston University. Boston, MA, USA 1998-2001
- UCLA-CONICIT (Venezuela) Graduate Fellowship Award. Boston, MA, USA 1996-2000
- *José Félix Rivas* National Medal, Outstanding Achievement Youth Award: Academy, Sports, and Culture, Venezuela 1996
- *Magna cum laude* and first in class (ranked 1/123). Informatics Engineering. Universidad Centroccidental (UCLA), Venezuela 1995
- College Honors Scholar, Universidad Centroccidental, Venezuela 1990-1995
- *Gran Mariscal de Ayacucho* Undergraduate Scholarship Award, Venezuela 1993-1995

## PUBLICATIONS IN REFEREED JOURNALS/PROCEEDINGS

1. Rómer Rosales, Kannan Achan, and Brendan Frey. **Unsupervised Image Translation**. In Proc. *International Conference on Computer Vision (ICCV)*, 2003.
2. Rómer Rosales, Kannan Achan, and Brendan Frey. **Translating Images by Unsupervised Estimation of Switching Filters**. Invited paper. In Proc. *IEEE Statistical Signal Processing (SSP)*, 2003.
3. Rómer Rosales and Brendan Frey. **Learning Generative Models of Affinity Matrices**. In Proc. *19th Conference on Uncertainty in Artificial Intelligence (UAI)*, 2003.
4. Rómer Rosales and Stan Sclaroff. **A Framework for Heading-Guided Recognition of Human Activity**. *Computer Vision and Image Understanding (CVIU)*, 2003.
5. Rómer Rosales and Stan Sclaroff. **Algorithms for Inference in the Specialized Mappings Architecture 2002**. In Proc. *IEEE International Conference on Automatic Face and Gesture Recognition (FG2002)*, 2002.
6. Rómer Rosales and Stan Sclaroff. **Learning Body Pose via Specialized Maps**. In Proc. *Neural Information Processing Systems 14*, 2001.
7. Rómer Rosales, Matheen Sidiqqi, Joni Alon, and Stan Sclaroff. **3D Body Pose through Virtual Cameras**. In Proc. *IEEE Computer Vision and Pattern Recognition (CVPR)*, 2001.

8. Stan Sclaroff, George Kollios, Margrit Betke, and Rómer Rosales. **Motion Mining**. Proc. 2nd International Workshop on Multimedia Databases and Image Communication, 2001.
9. Rómer Rosales, Vassilis Athitsos, Leonid Sigal, and Stan Sclaroff. **3D Hand Pose Reconstruction using Specialized Mappings**. In *Proc. IEEE International Conference on Computer Vision (ICCV)*, 2001.
10. Rómer Rosales and Stan Sclaroff. **Estimating Human Body Pose from Single Images via the Specialized Mappings Architecture**. In *Proc. IEEE Workshop on Human Motion*, 2000.
11. Rómer Rosales and Stan Sclaroff. **Inferring Body Pose without Tracking Body Parts**. In *Proc. IEEE Computer Vision and Pattern Recognition (CVPR)*, 2000.
12. Rómer Rosales and Stan Sclaroff. **Learning and Synthesizing Human Body Pose and Motion**. In *Proc. IEEE International Conference on Automatic Face and Gesture Recognition (FG2000)*, 2000.
13. Rómer Rosales and Stan Sclaroff. **Trajectory Guided Recognition of Actions**. In *Proc. SPIE.*, 1999.
14. Rómer Rosales and Stan Sclaroff. **3D Trajectory Recovery for Tracking Multiple Objects and Trajectory Guided Recognition of Actions**. In *Proc. Computer Vision and Pattern Recognition (CVPR)*, 1999.
15. Rómer Rosales and Stan Sclaroff. **Improved Tracking of Multiple Humans with Trajectory Prediction and Occlusion Modeling**. In *Proc. IEEE Workshop on the Interpretation of Visual Motion (CPVR)*, 1998.

#### IN REVIEW / IN PREPARATION

1. Rómer Rosales and Brendan Frey. **Approximate Inference in Factor Graphs with High Order Factors**, 2004 (in preparation)
2. Rómer Rosales and Stan Sclaroff. **Combining Generative and Discriminative Models for Inferring Articulated Body Pose from a Single Image**, 2003 (submitted to IEEE PAMI)
3. Rómer Rosales, Kannan Achan, and Brendan Frey. **Learning Edge Detection**. 2003 (submitted to CVPR)

#### OTHER PROFESSIONAL ACTIVITIES

Reviewer for major journals and conferences: Machine Learning Journal, Transactions on Pattern Analysis and Machine Intelligence, Image Processing, and Signal Processing, AISTATS, CVPR, ICCV, NIPS, ICML, etc. Program Committee for CVPR 2001, ICCV 2003, ICML 2004.

#### PERSONAL INFORMATION

- Born: February 16, 1973
- Citizenship: Venezuelan
- US visa status: J1 exchange scholar, currently on academic training
- Canada visa status: hold temporary work permit

#### OTHER SKILLS AND INTERESTS

**Languages:** fluent in Spanish and English, basic knowledge of Greek. **Computer skills:** fast and efficient programmer, experienced in C, C++, Visual C, Matlab, Perl, Java, OpenGL, Intel OpenCV, SGI Image Vision Library, HTML, Visual Basic, DBM'S, 80x86 assemblers, UNIX, Linux, Windows, DOS, MacOS, and many application programs. **Other interests:** writing, created and published the student newsletters while an undergraduate; swimming, competed in (Venezuelan) national team (1988-1993); hiking, reached summits in the Andes and Northeast USA; music, some performance experience (piano/mandolin).