

Philippos Mordohai
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EDUCATION

Ph.D. in Electrical Engineering University of Southern California, Los Angeles, CA (2005)

M.S. in Electrical Engineering, University of Southern California, Los Angeles, CA (2000)

Diploma in Electrical and Computer Engineering, Aristotle University of Thessaloniki, Greece (1998)

RESEARCH INTERESTS

- Binocular, multiple-view and video-based 3D reconstruction
- Perceptual organization
- 3D shape representation and object recognition
- Large-scale visual processing and structure inference
- Machine learning

POSITIONS HELD

Assistant Professor Department of Computer Science, Stevens Institute of Technology
Aug 2008 - present

Postdoctoral Researcher Department of Computer and Information Science, University of Pennsylvania (UPenn)
Aug 2007 - Aug 2008

Postdoctoral Research Associate Department of Computer Science, University of North Carolina at Chapel Hill (UNC)
Sep 2005 - Jul 2007

Research Assistant Department of Computer Science, University of Southern California (USC)
Jan 2000 - Aug 2005

Research Assistant Department of Electrical Engineering, University of Southern California (USC)
Jan - May 1999

PUBLICATIONS

Dissertations and Book

1. **P. Mordohai** and G. Medioni. *Tensor Voting: A Perceptual Organization Approach to Computer Vision And Machine Learning*. A.C. Bovik (editor). Synthesis Lectures on Image, Video, and Multimedia Processing. Morgan & Claypool. 136 pages. November, 2006
2. **P. Mordohai**. *A Perceptual Organization Approach for Figure Completion, Binocular and Multiple-View Stereo and Machine Learning using Tensor Voting*. Ph.D. Thesis. August, 2005
3. **P. Mordohai**. *Netscape Navigator plug-in for decoding pyramid-encoded medical images with watermarks*. (In greek). Diploma thesis. Electrical and Computer Engineering Department Aristotle University of Thessaloniki, Greece. June, 1998

Journal Articles

1. V. Kwatra, **P. Mordohai**, S. Kumar Penta, R. Narain, M Carlson, M. Pollefeys and M. Lin. *Fluid in Video: Augmenting Real Video with Simulated Fluids*. Eurographics, 2008 (acceptance rate for oral presentations: 19.3%); also in Computer Graphics Forum, vol. 27, no. 2, p. 487-496, 2008. (impact factor in 2007: 1.107)
2. M. Pollefeys, D. Nistér, J.-M. Frahm, A. Akbarzadeh, **P. Mordohai**, B. Clipp, C. Engels, D. Gallup, S.-J. Kim, P. Merrell, C. Salmi, S. Sinha, B. Talton, L. Wang, Q. Yang, H. Stewénus, R. Yang, G. Welch, H. Towles. *Detailed Real-Time Urban 3D Reconstruction From Video*. International Journal of Computer Vision, vol. 78, no. 2-3, pp. 143-167, July 2008. (impact factor: 6.09 first in Computer Science AI in 2006)
3. **P. Mordohai** and G. Medioni. *Stereo using Monocular Cues within the Tensor Voting Framework*. IEEE Trans. on Pattern Analysis and Machine Intelligence, vol. 28, no. 6, pp. 968-982, June 2006. (impact factor: 4.31 second in Computer Science AI in 2006)
4. W.S. Tong, C.K. Tang, **P. Mordohai**, and G. Medioni. *First Order Augmentations to Tensor Voting for Boundary Inference and Multiscale Analysis in 3-D*. IEEE Trans. on Pattern Analysis and Machine Intelligence, vol. 26, no. 5, pp. 594 - 611, May 2004. (impact factor: 4.35 second in Computer Science AI in 2004)
5. M.S. Lee, G. Medioni and **P. Mordohai**. *Inference of Segmented Overlapping Surfaces from Binocular Stereo*. IEEE Trans. on Pattern Analysis and Machine Intelligence, vol. 24, no. 6, pp. 824-837, June 2002. (impact factor: 2.92 second in Computer Science AI in 2002)

Highly-Selective Conference Proceedings

1. A. Patterson, **P. Mordohai** and K. Daniilidis. *Object Detection from Large-Scale 3D Datasets using Bottom-up and Top-down Descriptors*. European Conference on Computer Vision (ECCV), 2008. (acceptance rate: 27.9%)
2. D. Gallup, J.-M. Frahm, **P. Mordohai** and M. Pollefeys. *Variable Baseline/Resolution Stereo*. International Conference on Computer Vision and Pattern Recognition (CVPR), 2008. (acceptance rate for oral presentations: 4%)
3. P. Merrell, A. Akbarzadeh, L. Wang, **P. Mordohai**, J.-M. Frahm, R. Yang, D. Nistér and M. Pollefeys. *Real-Time Visibility-Based Fusion of Depth Maps*. International Conference on Computer Vision (ICCV), 2007. (acceptance rate for oral presentations: 3.9%)

4. E.S. Larsen, **P. Mordohai**, M. Pollefeys and H. Fuchs. *Temporally Consistent Reconstruction from Multiple Video Streams Using Enhanced Belief Propagation*. International Conference on Computer Vision (ICCV), 2007. (acceptance rate: 23.5%)
5. S. Sinha, **P. Mordohai** and M. Pollefeys. *Multi-View Stereo via Graph Cuts on the Dual of an Adaptive Tetrahedral Mesh*. International Conference on Computer Vision (ICCV), 2007. (acceptance rate: 23.5%)
6. D. Gallup, J.-M. Frahm, **P. Mordohai**, Q. Yang and M. Pollefeys. *Real-time Plane-sweeping Stereo with Multiple Sweeping Directions*. International Conference on Computer Vision and Pattern Recognition (CVPR), 2007. (acceptance rate: 27.5%)
7. **P. Mordohai** and G. Medioni. *Unsupervised Dimensionality Estimation and Manifold Learning in high-dimensional Spaces by Tensor Voting*. International Joint Conference on Artificial Intelligence, pp. 798-803, 2005. (acceptance rate for oral presentations: 18.1%)
8. **P. Mordohai** and G. Medioni. *Stereo using Monocular Cues within the Tensor Voting Framework*. European Conference on Computer Vision (ECCV), Lecture Notes in Computer Science, vol. 3024, pp 588-601, 2004. (acceptance rate for oral presentations: 7.4%)

Other Conference and Workshop Proceedings

1. P. Merrell, **P. Mordohai**, J.-M. Frahm and M. Pollefeys. *Evaluation of Large Scale Scene Reconstruction*. Virtual Representations and Modeling of Large-scale environments (VRML), 2007.
2. **P. Mordohai**, J.-M. Frahm, A. Akbarzadeh, B. Clipp, C. Engels, D. Gallup, Merrell, C. Salmi, S. Sinha, B. Talton, L. Wang, Q. Yang, H. Stewénus, R. Yang, H. Towles, G. Welch, M. Pollefeys and D. Nistér. *Real-Time Video-Based Reconstruction of Urban Environments*. 3D-ARCH'2007: 3D Virtual Reconstruction and Visualization of Complex Architectures, 2007.
3. E.S. Larsen, **P. Mordohai**, M. Pollefeys and H. Fuchs. *Simplified Belief Propagation for Multiple View Reconstruction*. Third International Symposium on 3-D Data Processing, Visualization and Transmission (3DPVT), 2006.
4. **P. Mordohai** and G. Medioni. *Dense Multiple View Stereo with General Camera Placement using Tensor Voting*. Second International Symposium on 3-D Data Processing, Visualization and Transmission (3DPVT), 2004.
5. **P. Mordohai** and G. Medioni. *Junction Inference and Classification for Figure Completion using Tensor Voting*. Workshop on Perceptual Organization in Computer Vision (POCV), 2004.
6. O. Dor, **P. Mordohai**, C.G. Sammis. and Y. Ben-Zion. *Slip Surfaces in Fault Breccia From the Sierra Madre Fault Zone: Geometry and Mechanical Implications*. SECE, Proceedings and Abstracts, 2003.
7. **P. Mordohai**, O. Dor, J. Zechar, C.G. Sammis. and Y. Ben-Zion. *Slip Surfaces in Fault Breccia From the Sierra Madre Fault Zone: Geometry and Mechanical Implications*. American Geophysical Union, EOS, 2003.
8. **P. Mordohai** and G. Medioni. *Perceptual Grouping for Multiple View Stereo using Tensor Voting*. International Conference on Pattern Recognition (ICPR), vol. 3, pp. 639-644, 2002.

9. **P. Mordohai**, G. Medioni, and M.S. Lee. *Inference of Segmented Overlapping Surfaces from Binocular and Multiple-View Stereo*. Third Workshop on Perceptual Organization in Computer Vision (POCV), 2001.

Book Chapters

1. **P. Mordohai** and G. Medioni. *Manifold Learning*. In *Encyclopedia of Biometrics*, Stan Z. Li (editor), Springer, 2008 (in press)
2. G. Medioni and **P. Mordohai**. *Saliency in Computer Vision*. In *Neurobiology of Attention*, L. Itti, G. Rees, and J. Tsotsos (editors), Elsevier Science, 2005.
3. G. Medioni, **P. Mordohai**, and M. Nicolescu. *The Tensor Voting Framework*. In *Handbook of Geometric Computing : Applications in Pattern Recognition, Computer Vision, Neuralcomputing, and Robotics*, E. Bayro-Corrochano (editor), Springer-Verlag, 2005.
4. G. Medioni and **P. Mordohai**. *The Tensor Voting Framework*. In *Emerging Topics in Computer Vision*, S.B. Kang and G. Medioni (editors), Prentice Hall, 2004.

Invited Conference and Workshop Proceedings

1. A. Akbarzadeh, J.-M. Frahm, **P. Mordohai**, B. Clipp, C. Engels, D. Gallup, P. Merrell, M. Phelps, S. Sinha, B. Talton, L. Wang, Q. Yang, H. Stewenius, R. Yang, G. Welch, H. Towles, D. Nistér and M. Pollefeys. *Towards Urban 3D Reconstruction From Video*. Third International Symposium on 3-D Data Processing, Visualization and Transmission (3DPVT), 2006.

TEACHING

Lecturer Short Course in conjunction with the IEEE International Conference on Computer Vision and Pattern Recognition, Minneapolis, Minnesota, USA **June 2007**

Designed and taught a four-hour short course entitled "Tensor Voting: A Perceptual Organization Approach for Computer Vision and Machine Learning".

Tutorial Instructor Department of Computer Science, UNC **Fall 2005**

Designed and taught ten-week tutorial on "Multiple View Geometry", based on R. Hartley's and A. Zisserman's *"Multiple View Geometry in Computer Vision"*. Attendees to the tutorial included graduate students, research staff and faculty of the department.

Substitute Instructor Department of Computer Science, UNC **Fall 2006**

Gave two lectures for the graduate level "3D Urban Modeling" course.

Substitute Instructor Department of Computer Science, UNC **Fall 2005**

Gave four lectures for the graduate level "Recent Advances in Computer Vision and Image Analysis" course.

Guest Lecturer Department of Computer Science, USC **Spring 2005**

Gave one lecture for the graduate level "Advanced Topics in Computer Vision" course.

Substitute Instructor Department of Computer Science, USC **Fall 2004**

Gave one lecture for the graduate level "Computer Vision" course.

Mentor Viterbi School of Engineering, USC

2004-2005

Mentored undergraduate students (a freshman and three juniors) performing research in computer vision.

INVITED LECTURES AND PRESENTATIONS

1. *Structure from Data*, Computer Science Seminar, Stevens Institute of Technology, hosted by George Kamberov, March 2008.
2. *Three Tales of Reconstruction: Real-time, Accurate and Temporally Consistent*, Computer Vision seminar, University of Southern California, hosted by Gérard Medioni, October 2007.
3. *Stereo using Tensor Voting, Real-Time Urban Modeling and other Tales of Reconstruction*, GRASP Laboratory seminar, University of Pennsylvania, hosted by Kostas Daniilidis, May 2007.
4. *A Perceptual Organization Approach for Figure Completion, Binocular and Multiple-View Stereo and Machine Learning using Tensor Voting*, Image Lunch, University of North Carolina at Chapel Hill, hosted by Stephen Pizer, November 2005.
5. *Binocular and Multiple View Stereo using Tensor Voting*, at the Digital Technology Center, University of Minnesota, hosted by Stergios Roumeliotis, March 2005.
6. *The Tensor Voting Framework*, at the Computer Graphics and Immersive Technologies group, University of Southern California, hosted by Ulrich Neumann, June 2003.
7. *Multiple View Stereo using Tensor Voting*, at the Machine Vision Group, Jet Propulsion Laboratory, NASA, hosted by Larry Matthies, May 2002.

AWARDS

- Best Demo Award for *Real-Time Video-Based Reconstruction of Urban Environments* by J.-M. Frahm, A. Akbarzadeh, **P. Mordohai**, B. Clipp, C. Engels, D. Gallup, P. Merrell, C. Salmi, S. Sinha, B. Talton, L. Wang, Q. Yang, H. Stewénus, H. Towles, G. Welch, R. Yang, D. Nistér and M. Pollefeys during the International Conference on Computer Vision and Pattern Recognition (CVPR), Minneapolis, Minnesota, USA, June 2007.
- Listed in Marquis Who's Who in Science and Engineering 2007.
- USC Integrated Media Systems Center Award for Excellence in Technology Demonstrations, 2003.
- Phi-Kappa-Phi All-University Honor society, The University of Southern California Chapter, 2000.
- National Scholarship Foundation of Greece (top 5 GPA in ECE Department), 1997 and 1998.
- Award of excellence in the Greek Mathematical Society Annual Student Contest, 1990, 1992 and 1993.

PH.D. COMMITTEE MEMBER

- E. Scott Larsen, *Temporal Multi-View Reconstruction Using Enhanced Belief Propagation*, Department of Computer Science, UNC, October 2006.

PROFESSIONAL AFFILIATIONS AND SERVICE

- Chair of local organization for the Third International Symposium on 3-D Data Processing, Visualization and Transmission, Chapel Hill, North Carolina, 2006.
- Program chair for the Search in 3D workshop in conjunction with CVPR 2008.
- "Workshop czar" for the Sixth Workshop on Perceptual Organization in Computer Vision in conjunction with CVPR 2008.
- Journal reviewer:
 - IEEE Transactions on Pattern Analysis and Machine Intelligence
 - IEEE Transactions on Image Processing
 - IEEE Transactions on Neural Networks
 - IEEE Transactions on Robotics
 - International Journal of Computer Vision
 - Computer Vision and Image Understanding Journal
 - Machine Vision and Applications Journal
 - EURASIP Journal of Image and Video Processing
 - The Visual Computer
 - Elsevier journal on Signal Processing
 - Elsevier journal on Computers & Geosciences
 - IEE Electronic Letters
- Conference reviewer/member of program committee:
 - European Conference on Computer Vision 2008
 - SIGGRAPH Asia 2008
 - Fourth International Symposium on 3D Data Processing, Visualization and Transmission 2008
 - Workshop on Perceptual Organization in Computer Vision 2008
 - Technical Demonstrations of ACM Multimedia 2008
 - International Conference on Robotics and Automation 2008
 - IEEE International Conference on Multimedia & Expo 2008

- International Conference on Computer Vision 2007
- Asian Conference on Computer Vision 2007
- ACM Symposium on Solid and Physical Modeling 2007
- International Conference on Computer Vision and Pattern Recognition 2007
- Third International Symposium on 3D Data Processing, Visualization and Transmission 2006
- European Conference on Computer Vision 2006
- Fourth Workshop on Perceptual Organization in Computer Vision 2004
- Member of the IEEE and the IEEE computer society since 2001.