

Gregory Shakhnarovich

Assistant Professor
Toyota Technological Institute
1427 East 60th Street, Chicago, IL
gregory@tti-c.org
<http://www.tti-c.org/shakhnarovich>

RESEARCH

INTERESTS

- ◇ **Computer vision**, in particular automatic categorization and parameter estimation for visual objects.
- ◇ **Machine learning**, in particular example-based methods, unsupervised and semi-supervised learning.
- ◇ **Brain-machine interfaces**, in particular neural decoding and neuro-motor prosthetics.

EDUCATION

- ◇ **Massachusetts Institute of Technology**, Cambridge, MA.
Ph.D. in Computer Science, 2005.
Dissertation topic: *Learning Task-Specific Similarity*.
Advisor: Prof Trevor Darrell.
- ◇ **Technion–Israel Institute of Technology**, Haifa, Israel.
M.Sc. (cum laude) in Computer Science, 2001.
Thesis title: *Smoothed Bootstrap and Statistical Data Cloning for Classifier Evaluation*.
Advisors: Prof. Yoram Baram, Dr. Ran El-Yaniv.
- ◇ **Hebrew University**, Jerusalem, Israel.
B.Sc. (cum laude) in Mathematics and Computer Science, 1994.

RESEARCH

- ◇ **Assistant Professor**, Toyota Technological Institute at Chicago, starting February 2008.
- ◇ **Postdoctoral Research Associate**, Department of Computer Science, Brown University, October 2005-present. Research topics: brain-machine interfaces, neural decoding of motor commands, analysis of recorded neural activity.
- ◇ **Research Assistant**, Computer Science and Artificial Intelligence Laboratory, MIT, 2000-2005. Research topics: statistical machine learning, human identification with face and gait, human pose estimation and articulated tracking, object classification.

- ◇ **Research Intern**, Mitsubishi Electric Research Lab, Summer 2002 & 2003. Developed and implemented machine learning algorithms for example-based estimation of articulated hand pose from multiple views, and algorithms for gender and ethnicity classification from face imagery.

TEACHING

- ◇ **Instructor**, *Introduction to Machine Learning*, Brown University (Fall 2006). Designed a core machine learning course, taught to a mixed senior undergraduate and graduate audience; prepared and taught lectures, created problem sets and exams and supervised two graduate TAs.
- ◇ **Teaching Assistant**, *Machine Learning*, MIT (Fall 2002) Prepared and taught weekly recitations, created problem sets and exams.
- ◇ **Teaching Assistant**, Technion (1998-2000) Courses: *Introduction to Computer Science*, *Introduction to Systems Programming*, *Pattern Recognition and Data Mining*. Prepared and taught weekly recitations, created problem sets and exams.

PUBLICATIONS

Peer-reviewed journal and conference papers

- P. K. Artemiadis, G. Shakhnarovich, C. Vargas-Irwin, J. P. Donoghue, M. J. Black, *Decoding grasp aperture from motor-cortical population activity*, Proceedings of IEEE Neural Engineering Conference, 2007.
- G. Shakhnarovich, S.-P. Kim, M. J. Black, *Nonlinear Physically-Based Models for Decoding Motor-Cortical Population Activity*, Neural Information Processing Systems, 2006.
- N. Srebro, G. Shakhnarovich, S. T. Roweis, *An Investigation of Computational and Informational Limits in Gaussian Mixture Clustering*, Proceedings of International Conference on Machine Learning, 2006.
- L. Taycher, G. Shakhnarovich, T. Darrell, D. Demirdjian, *Conditional Random People: Tracking Humans with CRFs and Grid Filters*, Proceedings IEEE Conf. on Computer Vision and Pattern Recognition, 2006.
- D. Demirdjian, L. Taycher, G. Shakhnarovich, T. Darell, *Avoiding the Street-light Effect: Tracking by Exploring Likelihood Modes*, Proceedings of the International Conference on Computer Vision, 2005.
- L. Ren, G. Shakhnarovich, J. Hodgins, H. Pfister, P. Viola, *Learning Silhouette Features for Control of Human Motion*, ACM Transactions on Graphics, 2005.
- K. Grauman, G. Shakhnarovich, T. Darrell, *Virtual Visual Hulls: Example-Based 3D Shape Inference from a Single Silhouette*, Proceedings of the 2nd Workshop on Statistical Methods in Video Processing, 2004.
- K. Grauman, G. Shakhnarovich, T. Darrell, *A Bayesian Approach to Image-Based Visual Hull Reconstruction*, Proceedings IEEE Conf. on Computer Vision and Pattern Recognition, 2003.

K. Grauman, G. Shakhnarovich, T. Darrell, *Inferring 3D Structure with a Statistical Image-Based Shape Model*, Proceedings of the International Conference on Computer Vision, 2003.

G. Shakhnarovich, P. Viola, T. Darrell, *Fast Pose Estimation with Parameter Sensitive Hashing*, Proceedings of the International Conference on Computer Vision, 2003.

G. Shakhnarovich, P. A. Viola, B. Moghaddam, *A Unified Learning Framework for Real Time Face Detection and Classification*, Proceedings of the Int. Conf. on Automatic Face and Gesture Recognition, 2002.

G. Shakhnarovich, J. W. Fisher, T. Darrell, *Face recognition from long-term observations*, Proceedings of European Conference on Computer Vision, 2002.

G. Shakhnarovich, T. Darrell, *On Probabilistic Combination of Face and Gait Cues for Identification*, Proceedings of the Int. Conf. on Automatic Face and Gesture Recognition, 2002.

B. Moghaddam, G. Shakhnarovich, *Boosted Dyadic Kernel Discriminants*, Neural Information Processing Systems, 2002.

G. Shakhnarovich, L. Lee, T. Darrell, *Integrated Face and Gait Recognition From Multiple Views*, Proceedings IEEE Conf. on Computer Vision and Pattern Recognition, 2001.

G. Shakhnarovich, R. El-Yaniv, Y. Baram, *Smoothed Bootstrap and Statistical Data Cloning for Classifier Evaluation*. Proceedings of International Conference on Machine Learning, 2001.

Edited volume and book chapters

G. Shakhnarovich, T. Darrell, P. Indyk, Editors. *Nearest Neighbors in Learning and Vision: Theory and Practice*. MIT Press, 2005.

G. Shakhnarovich, B. Moghaddam, *Face Recognition in Subspaces*, In Handbook of Face Recognition, S. Z. Li and A. K. Jain, Ed. Springer-Verlag, 2004.

TALKS AND PRESENTA- TION

- ◇ **Society for Neuroscience Annual Meeting**, poster, 2006.
- ◇ **Workshop on Advances in Computational Motor Control**, talk, 2006.
- ◇ **Learning Workshop at Snowbird**, posters, 2005 and 2006.
- ◇ **Gordon Research Conference on Sensory Coding and the Natural Environment**, poster, 2004.
- ◇ **Weizmann Institute of Science** (Vision and Robotics Seminar), 2002 and 2004
- ◇ **Brown University** (Pattern Recognition Seminar), 2004
- ◇ **Hebrew University of Jerusalem** (Vision Seminar), 2002 and 2004
- ◇ **Microsoft Research–Redmond** (Vision and Imaging Group), 2003

- ◇ **Technion** (The Pixel Club), 2002

SERVICE

Program committees: ICCV 2005, ECCV 2006, CVPR 2006, AI&Statistics 2007, AAAI 2007, ICML 2007, ICML 2008, ECCV 2008.

Workshop organizer (with T. Darrell, P. Indyk and P. Viola): Nearest neighbor methods in vision and learning, at Neural Information Processing Systems 2003.

Founding organizer of MIT Machine Vision Colloquium (2003-2005).

Reviewer for IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Transactions on Image Processing, IEEE Transactions on Biomedical Engineering, Neural Information Processing Systems.

REFERENCES

Available upon request.