

Gary B. Huang

CONTACT INFORMATION	Janelia Research Campus Howard Hughes Medical Institute Ashburn, VA 20147 USA	huangg@janelia.hhmi.org vis-www.cs.umass.edu/~gbhuang www.janelia.org/people/gary-b-huang
OBJECTIVE	To develop and apply cutting-edge tools in artificial intelligence that benefit society in a novel, practical manner	
RESEARCH INTERESTS	Machine Learning, Computer Vision, Deep Learning, Graphical Models, Synapse Detection, Image Segmentation, Neural Circuit Reconstruction, Face Recognition	
EDUCATION	University of Massachusetts, Amherst Ph.D., Computer Science, 2012, Advisor: Erik Learned-Miller GPA: 4.0 / 4.0 Stanford University M.S., Artificial Intelligence, Computer Science, 2006 GPA: 3.834 / 4.0 B.S. with Distinction, Mathematics, 2005 GPA: 3.826 / 4.0	
EXPERIENCE	Janelia Farm Research Campus, Howard Hughes Medical Institute <i>Sr Software Engineer; Fly EM</i> 2014 to present <i>Software Engineer; Jain Lab</i> 2012 to 2014 Conducted research on machine learning methods for automated analysis of electron microscopy images. Developed algorithms and software packages focused on deep architectures incorporating unsupervised feature learning. Contributions as part of Fly EM include development of automated classifiers for detecting pre-synaptic T-bars and their post-synaptic partners from simple point-annotation training data, the use of these automated systems in the Fly EM production pipeline on large-scale image volumes, and performance analysis of these automated predictions. Contributions as part of the Jain Lab include a parallelized system for local boundary prediction that improves over previous state-of-the-art in both accuracy and computation time, a framework for fast semi-automated data collection using human-in-the-loop, and an unsupervised feature learning method that is competitive with hand-designed features for the problem of agglomeration of 3d neuron fragments. University of Massachusetts, Amherst <i>CS Graduate Research Assistant</i> 2006 to 2012 Conducted research with Professor Erik Learned-Miller on computer vision and face processing. Developed Labeled Faces in the Wild (LFW), a database for studying face recognition algorithms under complex, unconstrained, real world conditions. LFW has become the de facto standard for measuring performance on unconstrained face recognition, with the associated technical report being cited over four hundred times. Ph.D. dissertation focused on applying weakly supervised learning methods for improved unconstrained face processing. Specifically, by developing algorithms incorporating unsupervised feature learning using deep learning methods, state-of-the-art results were achieved for both face verification and face alignment on LFW.	

Mitsubishi Electric Research Laboratories

Research Intern

2008

Conducted research on pose and lighting normalization for unconstrained face recognition with Dr. Michael Jones and Professor Erik Learned-Miller. Developed a patch-based warping algorithm to synthesize frontal face views, demonstrating increased performance when combined with existing face recognition systems, and optimized using an approximate nearest neighbor algorithm.

SELECTED PUBLICATIONS

Gary B. Huang, Louis K. Scheffer, and Stephen M. Plaza. Fully-Automatic Synapse Prediction and Validation on a Large Data Set. CoRR, [abs/1604.03075](https://arxiv.org/abs/1604.03075), 2016.

Gary B. Huang and Stephen Plaza. Identifying Synapses Using Deep and Wide Multiscale Recursive Networks. CoRR, [abs/1409.1789](https://arxiv.org/abs/1409.1789), 2014.

Gary B. Huang and Viren Jain. Deep and Wide Multiscale Recursive Networks for Robust Image Labeling. International Conference on Learning Representations (ICLR), 2014.

John A. Bogovic, Gary B. Huang (joint first authors), and Viren Jain. Learned versus Hand-Designed Feature Representations for 3d Agglomeration. International Conference on Learning Representations (ICLR), 2014.

Gary B. Huang. Weakly Supervised Learning for Unconstrained Face Processing. Ph.D. Thesis, University of Massachusetts, Amherst, 2012.

Gary B. Huang, Marwan Mattar, Honglak Lee, and Erik Learned-Miller. Learning to Align from Scratch. Advances in Neural Information Processing Systems (NIPS), 2012.

Gary B. Huang, Honglak Lee, and Erik Learned-Miller. Learning Hierarchical Representations for Face Verification with Convolutional Deep Belief Networks. IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2012.

Gary B. Huang, Andrew Kae, Carl Doersch, and Erik Learned-Miller. Bounding the Probability of Error for High Precision Optical Character Recognition. Journal of Machine Learning Research (JMLR), Volume 13, pp. 363-387, 2012.

Gary B. Huang, Manu Ramesh, Tamara Berg, and Erik Learned-Miller. Labeled Faces in the Wild: A Database for Studying Face Recognition in Unconstrained Environments. University of Massachusetts, Amherst, Technical Report 07-49, October, 2007.

HONORS AND AWARDS

- University of Massachusetts Amherst, Computer Science, Graduate Student Outstanding Dissertation Award, 2013
- Passed University of Massachusetts Amherst, Computer Science portfolio (candidacy exam) with distinction, 2008
- University of Massachusetts Amherst, Robin Popplestone Fellowship in Robotics & Artificial Intelligence, 2006
- ACM International Collegiate Programming Contest World Finals, 2004; Stanford team placed 13th out of 73