Paroma Varma

Curriculum Vitae

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paromavarma

Research Interests

Machine Learning, Computational Imaging, Signal Processing

Education

Doctor of Philosophy, *Electrical Engineering*, Stanford University, Stanford, CA.

2015 **Bachelor of Science**, *Electrical Engineering and Computer Science*, University of California at Berkeley, Berkeley, CA.

Fellowships and Awards

National Science Foundation Graduate Research Fellowship

Stanford Graduate Research Fellowship

Arthur M. Hopkin Award for High Academic Achievement

Outstanding Course Development and Teaching Award

Research Experience

Stanford InfoLab, *Advisor: Christopher Ré*

- Focusing on weak supervision models to automate process of labeling data
- Building a system to recognize and correct misspecified generative models

Stanford Computational Imaging Group, *Advisor: Gordon Wetzstein*

- Implemented proximal methods to solve 3D deconvolution problems efficiently
- Approximating aberrations in an optical system through PSF phase retrieval

Computational Imaging Lab, *Advisor: Laura Waller*

- Utilized non-linear least squares and iterative phase retrieval to extract phase and illumination source from partially coherent defocus images
- Adapted blind deconvolution algorithm to estimate PSF and improve depth of focus in digital holography

Helen Wills Neuroscience Institute, *Advisor: Robert Knight*

- Developed algorithm for automated identification of neural oscillatory components for various forms of electrophysiological data
- Examined spatio-temporal dynamics of decision making in the pre-frontal cortex using ECoG

Teaching and Mentoring Experience

TA for EE16A, Designing Devices and Systems

- Helped develop course material and lab-based projects for pilot offering of the class
- Taught weekly sections and labs, designed homework and discussion problems

TA for EE20N, Signals and Systems

- Taught weekly sections and labs

EECS Peer Advisor

- Held weekly drop-in hours for academic and policy advising

Industry Experience

Tablet and Netbooks Group Intern, Intel Corporation

- Developed algorithm to adjust camera's colorspace to better represent true color values
- Created internal testing tool to analyze image colors from tablet cameras

Business Intelligence Intern, GAP Inc.

- Used Selenium and Cucumber for automated testing of web-based reporting software (Microstrategy)
- Wrote scripts to solve issue regarding Microstrategy reports timing out

Abstracts, Presentations, and Publications

2016 P. Varma, R. Yu, D. Iter, C. De Sa, C. Ré. Socratic Learning: Empowering Generative Models. *arXiv, FILM-NIPS*

2016 P. Varma, G. Wetzstein. Efficient 3D Deconvolution Microscopy with Proximal Algorithms. *Imaging and Applied Optics Congress*

2015 J. Zhong, L. Tian, P. Varma, L. Waller. Nonlinear Optimization Algorithm for Partially Coherent Phase Retrieval and Source Recovery. *IEEE Transactions on Computational Imaging*

2015 J. Zhong, P. Varma, L. Tian, L. Waller. Source Shape Estimation in Partially Coherent Phase Imaging with Defocused Intensity. *Imaging and Applied Optics Congress*, Arlington, Virginia

2015 Z. Phillips, G. Gunjala, P. Varma, J. Zhong, L. Waller. Design of a Domed LED Illuminator for High-Angle Computational Illumination. *Imaging and Applied Optics Congress*, Arlington, Virginia

2015 L. Waller, L. Tian, J. Zhong, P. Varma. Phase Microscopy and 3D Imaging with Partially Coherent Light. *OSA Technical Digest (online)*

2014 M. Haller, P. Varma, T. Noto, R.T. Knight, A.Y. Shestyuk, B. Voytek. Automated "Spectral Fingerprinting" of Electrophysiological Oscillations. *Society for Neuroscience*, Washington DC

2014 P. Varma, D. Shuldman, L. Waller. Improving Depth Resolution in Digital Holography through Blind Deconvolution. *National Science Foundation REU*, UC Berkeley

2014 M. Haller, P. Varma, L.M. Rosenberg, N.E. Crone, E.F. Chang, J. Parvizi, R.T. Knight, A.Y. Shestyuk. Temporally Sustained Activity in Lateral Prefrontal Cortex Supports Decision Making. *International Conference on Cognitive Neuroscience*, Brisbane, Australia

2014 M. Haller, L.M. Rosenberg , P. Varma, N.E. Crone, E.F. Chang, J. Parvizi, R.T. Knight, A.Y. Shestyuk. High Gamma Duration in Human Prefrontal Cortex Predicts Decision Time. *International Neuropsychological Society*, Jerusalem, Israel