Curriculum Vitae of Richard D. Lange

Post-Doctoral Fellow :: University of Pennsylvania
website: http://cs.rochester.edu/~rlange blog: http://boxandarrowbrain.com

PhD in Brain and Cognitive Sciences/Computer Science — September 2020

Institution	University of Rochester
Fellowships & Grants	Sproull Fellowship ○ NSF Research Traineeship #1449828 ○ NIH Training Grant in Vision Science #5T32EY007125-27

BA in Computer Science/Engineering — June 2013

Institution	Dartmouth College	
Major	Computer Science modified with Engineering	GPA 3.88/4.0
Minor	Japanese Language and Literature	GPA 3.83/4.0
Honors	Magna Cum Laude ○ Honors Thesis ○ James O. Freedman Presidential Scholar ○ Leo, Deborah and Milton Williams (1942) Memorial Fund	

Research

*equal contribution

Shivkumar, S.*, **Lange, R.***, Chattoraj, A.*, Haefner, R. “A probabilistic population code based on neural samples.” NeurIPS 2018 Oral Presentation.

Lange, R., Haefner, R. “Task-induced neural covariability as a signature of Bayesian learning and inference.” Preprint: biorxiv/10.1101/081661v4

Lange, R., Chattoraj, A., Yates, J., Beck, J., Haefner, R. “A confirmation bias in perceptual decision-making due to hierarchical approximate inference.” Preprint: biorxiv/10.1101/440321v3

Lange, R., Gomez-Laberge, C., Haefner, M., Born, R. “Neural Signatures of Variable Beliefs with Task Learning in V1.” AREADNE 2018.

Lange, R., Bondy, A., Cumming, B., Haefner, R. “Within-trial dynamics of noise correlations imply binarized feedback of internal beliefs.” Cosyne 2018.

Chattoraj, A. **Lange, R.**, Wu, S., Shivkumar, S., Haefner, R. “A probabilistic population code based on neural sampling.” Cosyne 2018.

Lange, R., Haefner, R. “Characterizing and interpreting the influence of internal variables on sensory activity.” Current Opinion in Neurobiology 2017.

Kralik, J. D., Muldrew, D. B. C., Gunasekaran, D., **Lange, R.** “Cognitive control for goal-directed reaching in a humanoid robot.” IEEE-ROBIO 2017.

Lange, R., Chattoraj, A., Hochberg, M., Yates, J., Haefner, R. “Perceptual Confirmation Bias from Approximate Online Inference.” Cosyne 2017.

Lange, R., Bondy, A., Cumming, B., Haefner, R. “On the neural basis of probabilistic inference during perceptual decision-making.” Cosyne 2016.

Lange, R., Chattoraj, A., Haefner, R. “On the computational basis of the confirmation bias.” NIPS 2015 Workshop on Bounded Optimality and Rational Metareasoning.

Lange, R. “Using Motion Information to Improve the Heuristic of Objectness.” 2013. Undergraduate thesis.

Teaching Experience & Other Education

Co-instructor: Philosophy of Perception	**Fall 2018**
TA: Perception and Action	**Spring 2018**
Brains, Minds, and Machines Summer School	**Summer 2017**
Graduate Guest Lectures in Computational Neuroscience	**2016-2017**
TA: Social Implications of Computing	**Spring 2016**
Video Game Development (Rochester Scholars)	**Summer 2015**
TA: Machines and Consciousness	**Spring 2015**
TA: Introduction to Computer Science	**Fall 2010, Winter 2013**

TA: Dartmouth Machine Shop **Fall 2009**

Internships

Software Engineering	**Google, Inc.**	**Summer 2016**
Engineer in Residence	**The Harley School**	**2013-2014 Academic Year**
Software Engineering	**Crittercism/Apteligent**	**Winter 2012**
Engineering	**R. Brooks Associates, Inc**	**Summers 2008, 2010**

Other Selected Projects

RocAlphaGo	an open-source replication of Google DeepMind's AlphaGo AI http://www.github.com/Rochester-NRT/RocAlphaGo
VAE Tutorial	a tutorial to walk readers through creating their own custom Variational Auto-Encoder class in Keras http://www.github.com/wrongu/vae-tutorial
LORDAP	a Matlab/Octave toolbox for data pipeline management http://www.github.com/wrongu/lordap
Matlab-HMC	a Matlab implementation of Riemannian Hamiltonian Monte-Carlo sampling https://github.com/wrongu/Matlab-HMC