Todd Hagen

Curriculum vitae

📱 *+49 175 3458776*
✉ *todd.a.hagen@gmail.com*
� *https://github.com/tah0*

Education

09/2019– present	**Master of Science (expected)**, *Bernstein Center for Computational Neuroscience*, Berlin, Germany

Computational Neuroscience

Coursework in machine learning, control theory, complex systems, and applied category theory.

09/2009– 05/2013	**Bachelor of Arts**, *Pomona College*, Claremont, California, USA

Major: Neuroscience

Minor: Mathematics

Professional Activities

09/2022– 12/2022	**Visiting Research Intern**, *Tallinn University of Technology*, Tallinn, Estonia

Laboratory for Compositional Systems and Methods (`https://compose.ioc.ee/`)
Primary Investigator: Dr. Pawel Sobocinski

○ Applying Markov categories, string diagrams, and other tools from applied category theory to causal inference and probability theory.

01/2021– present	**Research Assistant**, *Humboldt-Universität zu Berlin, Institute for Theoretical Biology*, Berlin, Germany

Collective Information Processing Lab (`http://lab.romanczuk.de/`)
Primary Investigator: Dr. Pawel Romanczuk

○ Mathematical, computational analysis of a multi-agent social drift diffusion model.

○ Developing software for running simulation experiments and processing data.

10/2015– 06/2017	**Research Technician**, *University of Arizona, Department of Psychology*, Tucson, Arizona, USA

Neuroscience of Reinforcement Learning and Decision Making Lab (`http://u.arizona.edu/~bob`)
Primary Investigator: Dr. Robert Wilson

○ Developed computational models of human information integration using behavioral and pupillometry data from an auditory decision making task.

○ Published—as co-first and second author—results in Nature Human Behaviour and Nature Communications.

08/2013– 08/2015	**Research Assistant, Lab Manager**, *Yale University, Department of Psychology*, New Haven, Connecticut, USA

Motivated Cognition and Aging Brain Lab (`https://mcablab.science`)
Primary Investigator: Dr. Gregory Samanez-Larkin (now at Duke University)

○ Developed Python, R, and shell scripts to analyze fMRI and behavioral data from experiments, and heterogeneous data for meta-analysis.

○ Modeled decision variables (e.g. temporal discount rates) from behavioral data with neural imaging data (fMRI and PET).

Technical Skills

Data Analysis & Modeling
Python (numpy/scipy, TensorFlow, PyTorch)
MATLAB (various toolboxes)
R (various packages)

Neuroimaging
Analysis (AFNI, FSL, SPM)
Data (fMRI, DTI, EEG, PET)

Computing
Unix shells bash, tcsh
Typesetting
LaTeX, Microsoft/Libre-Office
Misc. emacs, git

Publications

Peer-Reviewed Articles

05/2020 Keung, W., **Hagen, T.A.** & Wilson, R.C. A divisive model of evidence accumulation explains uneven weighting of evidence over time. Nature Communications. `doi:10.1038/s41467-020-15630-0`

03/2019 Keung, W., **Hagen, T.A. (co-first author)**, & Wilson, R.C. Regulation of evidence accumulation by pupil-linked arousal processes. Nature Human Behaviour. `doi:10.1038/s41562-019-0551-4`

Book Chapters

07/2014 Samanez-Larkin G.R., **Hagen T.A.**, Weiner D.J.. Financial decision making across adulthood. In E. Bijleveld and H. Aarts (Eds.) The Psychological Science of Money (pp. 121–135). New York: Springer. `doi:10.1007/978-1-4939-0959-9`

Conference Presentations

06/2017 **Todd A. Hagen**, Robert Wilson. Wide-eyed and wrong? Pupil dilation and imperfect evidence accumulation in auditory perceptual decision. Presented at Reinforcement Learning and Decision Making (`rldm.org`), Ann Arbor, MI.

11/2016 **Todd A. Hagen**, Robert Wilson. Wide-eyed and Wrong? Pupil Dilation Correlates with Imperfect Evidence Accumulation in Auditory Perceptual Decisions. Presented at the Society for Neuroscience (`sfn.org`), San Diego, CA.

03/2015 **Todd A. Hagen**, Casey McLaughlin, Anika Josef, Rui Mata, Gregory R. Samanez-Larkin. Meta-Analysis of PET Imaging Studies of Adult Age Differences in the Dopamine System. Presented at the Scientific Research Network on Decision Neuroscience and Aging (`decisionneuroaging.network`), Miami, FL.

03/2015 Gorlick, M.A., **Hagen, T.A.**, Brooks, N., Hsu, M., Dang, L., Zald, D.H., Samanez-Larkin, G.R. Neural Subjective Value Representations Depend on Costs: Delay, Physical Effort, and Probability Discounting. Presented at the Scientific Research Network on Decision Neuroscience and Aging (`decisionneuroaging.network`), Miami, FL.

09/2014 **Todd A. Hagen**, Daniel J. Weiner, Jacob S. Young, David H. Zald, Gregory R. Samanez-Larkin. Human Striatal Dopamine D2 Receptor Availability Associated with Probabilistic Reward Learning. Presented at the Society for Neuroeconomics (`neuroeconomics.org`), Miami, FL.

Additional Conference Participation

08/2016 **Cognitive Science Society**, Philadelphia, PA. (`cognitivesciencesociety.org`)

02/2016 **Computational and Systems Neuroscience (COSYNE)**, Salt Lake City, UT. (`cosyne.org`)

11/2014 **PyData NYC**, New York, NY. (`pydata.org`)

03/2014 **Python Quants**, New York, NY. (`pythonquants.com`)

04/2013 **Cognitive Neuroscience Society**, San Francisco, CA. (`cogneurosociety.org`)