Hayden Scott

University of Rochester
Rochester, NY 14627

Phone: 479-409-4902
Email: hscott5@ur.rochester.edu
Website: hscott5.github.io

Education

University of Kentucky (2013-2018)
B.S. Neuroscience, Biochemistry minor, *cum laude*

University of Rochester (2018-present)
M.A. Brain and Cognitive Sciences (2018-2020)
Ph.D. Brain and Cognitive Sciences (2020-present; July 2023 expected graduation)

Competencies and Technical Skills

High-Dimensional data analysis	Brain-Computer interfaces	**Classification/Optimization**
Python	TensorFlow	Encoding/Decoding Models
Matlab	**Machine Learning**	Computer vision
Bayesian modelling	Pytorch	Information Theory

Experience

My research career has spanned several disciplines over the course of the last decade, including: Cognitive Science, Biochemistry, Neuroscience, and Artificial Intelligence. From these experiences I have gained a broad set of skills ranging from experimental design, biosensor manufacturing, data analysis, and computational modeling (machine learning, Deep learning, etc.). The bulk of my Ph.D. research uses high-dimensional analysis of neural data across brain networks (Rhesus Macaques), focusing on the interplay between the visual system and Prefrontal Cortex in guiding behavior. To this end I use ANN models (e.g. GANs and CNNs) and found striking similarities between latent representations in these models and the brain.

2014 – 2014 Summer Training in Addiction Research (STAR) Fellow
- I worked with underprivileged populations in rural Kentucky studying the development and treatment of drug addiction.

2014 – 2016 Chemical underpinnings of Cocaine addiction
- I used high temporal resolution voltammetry recordings to investigate drug seeking and reward behaviors. I was responsible for manufacturing of our biosensors, calibration and maintenance, and running experiments.

2016 – 2017 Independent Researcher investigating Alcohol Use Disorder
- I was awarded a one-year research studentship at Uppsala University (Sweden). While there, I set up and validated glutamate voltammetry recordings in their lab, as well as authored a paper on the interplay of sex and social isolation in the development of Alcohol Use Disorder.

2018 – 2021 NSF NRT-DESE: Data-Enabled Research into Human Behavior and its Cognitive and Neural Mechanisms
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I was awarded a research-focused training fellowship aimed at applying techniques from machine learning to neural data. I learned the theory and application of ANN models for various approaches, such as computer vision and natural language processing.

2018 – present High-dimensional analysis of selective visual attention mechanisms

- I utilize information theory, supervised (SVMs, decision trees, etc.), and unsupervised (GANs) models to relate behavior and sensory information to neural activity.

Leadership and Service

2015 - 2016	Ambassador for the College of Arts and Sciences, University of Kentucky
2018 - 2020	Head Graduate Representative BCS Faculty Liaison, University of Rochester
2019 - 2019	Visiting Speaker Host, University of Rochester Center for Visual Science
2020 - 2022	Graduate Recruitment Coordinator, University of Rochester
2018 - 2022	Mentorship of new trainees, University of Rochester (5 Undergraduate trainees)

Publications

Papers

1. Scott, H., et al. (2020). "Effects of pair-housing on voluntary alcohol intake in male and female Wistar rats." Alcohol. Elsevier. doi: 10.1016/j.alcohol.2019.12.005
2. Scott, H., Wimmer, K., Pasternak, T., & Snyder, A. C. (2023). Altered task demands lead to a division of labour for sensory and cognitive processing in the middle temporal area. *European Journal of Neuroscience*, 1– 16. https://doi.org/10.1111/ejn.15964

Conference Abstracts

Society for Neuroscience 2019

1. H. Scott, A. Snyder, I. Fruend. Humans can attend to complex latent image dimensions.
2. H. Scott, I. Fruend, A. Snyder. Complex feature sets constrained by deep generative image models drive visual evoked potentials in macaque monkeys.
3. H. Scott, K. Wimmer, T. Pasternak, A. Snyder. Common rules guide memory-guided comparisons of motion directions and locations in the lateral prefrontal cortex (LPFC).