Alex Bond, PhD

INTERESTS

natural intelligence (NI) | reinforcement learning | neurotech & computational psychiatry

RECENT EXPERIENCE

YALE UNIVERSITY POWERS LAB | POSTDOC
Aug. 2023 – Present, New Haven, CT

CARNEGIE MELLON UNIVERSITY COGNITIVE AXON LAB | POSTDOC
May 2022 – July 2023, Pittsburgh, PA

PSYCHOLOGY DEPT. | ADJUNCT PROFESSOR
Jan. 2022 – Present

COGNITIVE AXON LAB | GRADUATE STUDENT RESEARCHER
July 2017 – May 2022

PRINCETON UNIVERSITY INTELLIGENT PERFORMANCE AND ADAPTATION LAB | LAB MANAGER
May 2014 – July 2017, Princeton, NJ

EDUCATION

CARNEGIE MELLON UNIVERSITY | CARNEGIE MELLON NEUROSCIENCE INSTITUTE
PHD IN COGNITIVE NEUROSCIENCE WITH COMPUTATIONAL EMPHASIS
May 2022 | Pittsburgh, PA
Dissertation: Adaptive Decision Policy Dynamics

UNIVERSITY OF ALABAMA IN HUNTSVILLE
BS IN PSYCHOBIOLOGY
May 2012 | Huntsville, AL

EXPERIMENTAL SKILLS

Experimental design & validation | Eyetracking & pupillometry | Multimodal psychophysiological recording
Generalization testing | Behavioral analysis | fMRI

COMPUTATIONAL & ANALYTIC SKILLS

Applied machine learning | Artificial agent development | Cognitive modeling | Computational neuroimaging
and neural decoding | Precision neuroimaging | Inferential statistics | Simulation | Time series analysis
Bayesian analysis and numerical estimation | Signal processing | Python *(expert)* | R *(expert)* | SQL *(intermediate)*
High Performance Computing *(competent)* | Linux *(competent)*

HONORS

2023 Future Faculty Program, Eberly Center for Teaching Excellence and Educational Innovation
2020 Carnegie Mellon Graduate Student Representative Award
2019 Carnegie Mellon Neuroscience Institute Presidential Fellow
2017 National Institutes of Health (NIH) Behavioral Brain Research Training Fellowship

PUBLICATIONS

Bond K., Rubin, J., Verstynen, T. The representational form of spatial reinforcement learning. *In prep.*

Bond K., Rasero J., Madan, R., Bahuguna, J., Rubin, J., Verstynen, T. Competing neural representations of choice shape evidence accumulation in humans. bioRxiv. October 2022. Under review at eLife.

Bond K., Dunovan, K., Alexis Porter, Jonathan E Rubin, and Timothy Verstynen. Dynamic decision policy reconfiguration. eLife. December; 2021;10:e65540.

Bond K. and Taylor J.A. Structural learning in a visuomotor adaptation task is explicitly accessible. eNeuro. August; 10.1523/eneuro.0122-17.2017.

Bond K. and Taylor J.A. Flexible explicit but rigid implicit learning in a visuomotor adaptation task. The Journal of Neurophysiology. March; 10.1152/jn.00009.2015.

McDougle S.M., Bond K., and Taylor J.A. Implications of plan-based generalization in sensorimotor adaptation. The Journal of Neurophysiology. April; 10.1152/jn.00974.2016.

McDougle S.M., Bond K., and Taylor J.A. Explicit and implicit processes constitute the fast and slow processes of sensorimotor learning. The Journal of Neuroscience. July; 10.1523/jneurosci.5061-14.2015.

INVITED TALKS

Flexible policies for making choices in a complex world. Yale University. New Haven, CT. Given May 2023.

Regularization in model-based neuroscience. The Alan Turing Institute. London, Eng. Invited March 2023.

Dynamic decision policy reconfiguration. Brown University. Providence, RI. Invited April 2022.

LEADERSHIP

CMU GRADUATE STUDENT ASSEMBLY EXECUTIVE BOARD 1 of 8 | Vice President of Academic Affairs

October 2021 – May 2022

My efforts were guided by two simple ideas. Grad. students should have 1) effective mentors and 2) health insurance. Formed and led an initiative to look at the time course of GS needs as they go through the program to inform a university-wide mentorship education initiative. **Partnered with Institutional Research to collect data from 30% of the GS population. Used this data to form time-dependent mentorship policy. Partnered with University leadership to give ALL GS free insurance, including mental health support. Implemented Fall 2022.**

CMU VICE PROVOST OF RESEARCH SEARCH COMMITTEE | Invited advisor
UNIVERSITY STUDENT ADVISING COMMITTEE | Invited advisor
UNIVERSITY EDUCATION COUNCIL | Invited advisor
ASSOCIATE DEANS FOR GRADUATE PROGRAMS | Invited advisor
THREE MINUTE THESIS (3MT) COMPETITION JUDGE 1 of 1 | Invited Graduate Student Thesis Judge for CMU