Michael J. Seay

255 N Granada Ave, Apt #2059 • Tucson, AZ 85701 • (504) 319 5224

mikejseay@gmail.com LinkedIn

EDUCATION

University of California, Los Angeles – Los Angeles, CA

Ph.D in Psychology (work focused on Computational Neuroscience) *May 2022*

Tulane University – New Orleans, LA

Master of Science in Neuroscience *May 2013*
Bachelor of Science in Neuroscience, *magna cum laude* *May 2012*
Minor in Psychology, Minor in Mathematics, Coordinate Major in Cognitive Studies

EXPERIENCE

Buonomano Lab at UCLA – Graduate Student Researcher
August 2017 – present *Los Angeles, CA*

- Completed Ph.D focusing on Computational Neuroscience in May of 2022
- Designed and implemented multiple computational models explaining neural functions
- Published two first-author scientific articles, co-author on three forthcoming articles
- Handled large datasets, performed complex statistics and machine learning
- Mentored four undergraduate research volunteers, assisted teaching six courses

Henri Begleiter Neurodynamics Laboratory – Research Scientist
June 2015 – July 2017 *Brooklyn, NY*

- Co-created database system for storing, updating, and accessing 200k+ records containing complex and diverse scientific research information using Python and MongoDB
- Wrote module for analysis, visualization, and statistical testing of EEG results using Python
- Designed and implemented comprehensive processing pipeline for EEG data using MATLAB
- Devised novel algorithm for calculating Family History Density from tabular pedigree data, which provided better predictor of alcoholism risk than previous comparable measures
- Supported lab goals, publications, and presentations with hundreds of analyses, visualizations, and written results

Tulane Cognitive Neuroscience Laboratory – Student and Research Assistant
December 2010 – May 2015 *New Orleans, LA*

- Designed and implemented novel processing pipeline for EEG data
- Co-authored scientific article, contributing novel EEG analyses, visualizations, and writing
- Designed and executed original experiment, publishing results in honors thesis
- Assisted teaching of two courses, mentored undergraduates

SKILLS

Computer programming and literacy:

- Python
- SQL
- JavaScript
- R
- Unix-like operating systems
- MATLAB

Software:

- RStudio
- SPSS
- RStudio
- Tableau
- Adobe Photoshop & Illustrator
- Microsoft Office Suite

PUBLICATIONS & PRESENTATIONS

Published

Seay MJ, Natan RG, Geffen MN, Buonomano DV (2020). Differential Short-Term Plasticity of PV and SST Neurons Accounts for Adaptation and Facilitation of Cortical Neurons to Auditory Tones. *Journal of Neuroscience.*

Motanis H*, **Seay MJ***, Buonomano DV (2018). Short-Term Synaptic Plasticity as a Mechanism for Sensory Timing. *Trends in Neurosciences*. *contributed equally

Mock JR, **Seay MJ**, Charney DR, Holmes JL, Golob EJ (2015). Rapid cortical dynamics associated with auditory spatial attention gradients. *Frontiers in Neuroscience*.

Unpublished and theses

Zhou S*, **Seay MJ***, Taxidis J, Golshani P, Buonomano DV (under review). Multiplexing working memory and timing: encoding retrospective and prospective information in neural trajectories.

Soldado-Magraner S, **Seay MJ**, Laje R, Buonomano DV (under review). Orchestrated Excitatory and Inhibitory Learning Rules Lead to the Unsupervised Emergence of Up-states and Balanced Network Dynamics.

Liu B, **Seay MJ**, Buonomano DV (under review). Creation of neuronal ensembles and cell-specific homeostatic plasticity through chronic sparse optogenetic stimulation.

Seay MJ (2022). Neurocomputational mechanisms of timing, temporal context, and working memory. Ph.D thesis.

Seay MJ (2012). The effect of encoded stimulus strength on auditory cortical responses during short-term memory retrieval of pitch. Honor's Thesis.

Poster Presentations

Seay MJ, Natan RG, Geffen MN, Buonomano DV (2019). A cortical spiking model with differential short-term plasticity onto parvalbumin and somatostatin interneurons reproduces *in vivo* results of sensory adaptation in auditory cortex. Society for Neuroscience. Chicago, IL.

Seay MJ., Mock JR., Golob EJ (2014). Cortical representations of absolute and relative sound locations during an auditory spatial attention task. Society for Neuroscience. Washington, D.C.

Seay MJ., Turner S, Golob EJ (2011). Human brain dynamics in auditory processing. Tulane Neuroscience Program Research Poster Session. New Orleans, LA.

REFERENCES

Excellent references can be provided upon request by:

Bernice Porjesz
Professor, Psychiatry and Behavioral Sciences, SUNY Downstate Medical Center
Director, Henri Begleiter Neurodynamics Laboratory
bernice.porjesz@downstate.edu
(718) 270-2911

Dean Buonomano
Professor, Department of Neurobiology, UCLA
dbuono@ucla.edu
(310) 794-5009

Ed Golob
Professor, Department of Psychology, University of Texas at San Antonio
edward.golob@utsa.edu
(210) 458-8055