ADITI SINGH

https://github.com/aditisinghs aditi.singh(at)nyu.edu

EDUCATION

New York University New York, NY
PhD in Psychology 2024-Present
Advisor: Professor Esti Blanco-Elorietta

Princeton University Princeton, NJ
BSE Computer Science 2019-2023
Minors: Cognitive Science; Neuroscience; Statistics and Machine Learning
Research Advisor: Professor Uri Hasson
Member, Sigma Xi Honor Society

Horace Greeley High School Chappaqua, NY
Summa Cum Laude 2015-2019
Research Advisor: Professor Wei Ji Ma, New York University
Regeneron Science Talent Search National Research Finalist 2019

RESEARCH EXPERIENCE

Hasson Lab, Princeton University Princeton, NJ
Undergraduate Researcher Apr 2021–May 2023
Advisors: Professors Uri Hasson, Karthik Narasimhan, Ariel Goldstein
Cognitive Science Undergraduate Research Fellowship 2022

- Preprocessed neural data to align with audio after transcribing patient recordings.
- Analyzed ECoG dataset using a multi-label classifier trained on neural signals to identify model accuracy in decoding brain data. Studied if backchannel words share overlapping semantic and neural information in naturalistic conversations.
- Extracted word embeddings from a multimodal speech-to-text transformer model "Whisper." Compared Whisper with a unimodal text-based DLM "GPT-2" to analyze shared computational principles in language processing between the brain and DLMs.

Google Computer Science Research Mentorship Program Remote
Mentee Jan 2021 – Apr 2021

- Trained in developing research proposals and methodology for computing research investigations, formalizing research pathways and building peer networks.

Computational Cognitive Science Lab, Princeton University Princeton, NJ
Research Intern, Princeton Student-Initiated Internship Program Mar 2020–Aug 2020
Advisors: Professor Tom Griffiths, Dr. Ishita Dasgupta
William Reid Pitts, Jr., M.D. '63 Undergraduate Research Fellowship 2020

- Built linear regression and toy text-classification models to experiment with different types of word embeddings.
- Developed an LSTM neural network model to test compositionality and generalizability in linguistic data; evaluated whether the model could perform limited zero-shot learning with unfamiliar words in new contexts.

Ma Lab, Center for Neural Science, New York University New York, NY
Research Intern Jul 2017–Sep 2019
Advisors: Professor Wei Ji Ma, Dr. Andra Mihali

- Developed Bayesian probabilistic models based on resource rationality and item-limit theories to study visual search in short-term memory.
- Evaluated model performance to confirm if humans employ rational cognitive strategies in encoding visual stimuli to minimize neural cost.

WORK EXPERIENCE

Bloomberg L.P. New York, NY
Software Engineer Jun 2023–Present

- Developing and optimizing models for the Multi-Asset Risk System (MARS) pricing library to allow for faster analytics on trading and investment portfolios.

Princeton Computer Science Department Princeton, NJ
Undergraduate Course Assistant Sep 2021 – Dec 2021

- Evaluated and graded student coding assignments—provided feedback on code and effective programming practices to students from computing and non-computing backgrounds.

Princeton Economics Department Princeton, NJ
Research Assistant Jan 2021 – Apr 2021

- Created datasets using web solutions in Python for analyzing frictions in the European labor market.

Regeneron Pharmaceuticals Inc. Tarrytown, NY
Bioinformatics Intern May 2019 – Jul 2019

- Performed data mining of raw genetic expression matrix files for cell genomics sequencing data to translate public datasets to readable Loom data structures. Conducted regression and PCA analysis for data visualization.

PUBLICATIONS

- **Singh, A**., Mihali, A., Chou, W., Ma., W. J. (2023): A Computational Approach to Search in Visual Working Memory. *Under Review in Journal of Vision.* https://osf.io/preprints/psyarxiv/jqthb
- Goldstein, A., Wang, H., Niekerken, L.,...**Singh, A**.,..., Hasson, U. (2023): Deep Speech-to-Text Models capture the neural basis of spontaneous speech in everyday conversations. *Under review in Nature Human Behavior.* https://www.biorxiv.org/content/10.1101/2023.06.26.546557v1
- **Singh, A.,** Taliaferro, M., Blanco-Elorrieta, E.. (2025): Blending Boundaries: A Computational Approach to How Bilinguals Reconcile Cross-Linguistic Categorization. *Proceedings of Cognitive Science Society.*
- Taliaferro, M., **Singh, A.,** Blanco-Elorrieta, E.. (2025): Reconciling Cross-Linguistic in Categorization in the Bilingual Brain. *In Prep.*

PRESENTATIONS

- Senior Thesis Project: Understanding the Role of Speech vs. Language in Communication Using Deep-Learning Models (Apr 2023)
- Junior Thesis Project: Contextual Information of Backchannel Words in the Brain (Apr 2022)
- Paper review: A Rational Account of Pedagogical Reasoning (May 2023)
- Paper review: Reinforcement Learning Applications to Predict Dopamine Behavior in the Brain (Apr 2022)
- Paper review: Social Feedback in Vocal Learning of Finches (Mar 2022)
- Public presentation at National Geographic Society: Descriptive and Normative Accounts of Color Localization Performance in Visual Short-Term Memory (Washington D.C., Mar 2019)

RESEARCH PROJECTS

- Advisor: Professor Tom McCoy (2022). Analyzed the effectiveness of curriculum learning: how children learn with increasingly difficult tasks over time. Created two Bayesian models, a Hidden Markov Model and a Particle Filter model, to evaluate the effect of strong biases to the current state during recursive-rule learning.
- Advisor: Professor Robert Dondero, Andrew Johnson (2022). Designed an interactive web app "TigerTrips" for college students to propose and join activities during the semester. Worked in a team of four to manage both back-end functionality with databases in ElephantSQL, and front-end design using Render. Worked in Python, JavaScript, HTML, CSS, and Bootstrap.

VOLUNTEER EXPERIENCE

Princeton Women in Computer Science (PWiCS) Princeton, NJ
Corporate Outreach Chair Sep 2021–May 2023

- Developed methods of community engagement for 300+ university students, planned social and technical events, secured corporate sponsorships from technology and finance companies.
- Princeton University Computer Science Service Award 2023 for "commitment to excellence and going above and beyond to bring technology to women."

AWARDS & SCHOLARSHIPS

- New York University: Dean's Student Conference Fund, 2025
- Cognitive Science Society Travel Award, 2025
- MacCracken Fellowship for Doctoral studies, 2024
- Nominated to Sigma Xi Scientific Research Honor Society, Princeton University, 2023
- Princeton University Computer Science Service Award, 2023
- Cognitive Science Undergraduate Research Fellowship, Princeton University, 2022
- William Reid Pitts, Jr., M.D. '63 Undergraduate Research Fellowship, Princeton University, 2020
- Regeneron Science Talent Search (STS), "Top 40 in the Nation" Research Finalist, Society for Science and the Public, 2019
- U.S Presidential Scholar Semifinalist, 2019
- National Merit Scholar Finalist, 2019