

EDUCATION

The University of Texas at Austin

2024

Master of Science, Computer Science; Minor in Neuroscience

- **Master's Thesis:** Developed tests to interpret a deep neural network model of spatial and logical reasoning in the brain. Applied neuroscience techniques and created extensions of the architecture to refute key claims of the model and propose new directions for research into cognitive maps.

Texas A&M University

2020

Bachelor of Science in Computer Science; Minor in Mathematics

RELEVANT EXPERIENCE

Research Engineer

August 2024 - Present

University of Texas at Austin - Brain, Behavior, & Computation Lab

- Extending master's thesis research for Dr. Xue-Xin Wei to develop computational methods aimed at resolving open questions about the functional role of neurons in the hippocampus area of the brain.

Teaching Assistant, Computational Neuroscience

January 2024 - May 2024

University of Texas at Austin

- Assisted Dr. Wei by holding office hours, leading review sessions, grading assignments, and advising students on final projects
- Developed interactive notebooks to demonstrate key concepts in computational neuroscience and artificial neural networks, and delivered lectures based on these materials.

Part-time Student Researcher

August 2023 - May 2024

Sandia National Laboratories

- Designed an algorithm in C++ to match GPS measurements to roads, using a Marginal Particle Filter with an Unscented Kalman Filter core.

Software Engineer

August 2020 - June 2022

Dell Technologies

- Served customer bases worldwide by creating robust and rapid pipelines to update Dell.com, using Kafka messaging queues.
- Independently added a way to schedule updates to the website with Quartz.NET and Cassandra.

PUBLICATIONS

von Ebers M, Haque Nirjhar E, H. Behzadan A, Chaspari T 2020, '**Predicting the Effectiveness of Systematic Desensitization Through Virtual Reality for Mitigating Public Speaking Anxiety**' ICMI 2020: ACM International Conference on Multimodal Interaction, Utrecht, the Netherlands, October 25-29 (<https://youtu.be/4p4tXSkBAK8>)

GRADUATE PROJECTS

Neural Networks: Continual Learning through Imagination

<https://github.com/mx60s/CS394N>

- Replicated a previous approach for making an old model learn new classes of images (i.e. "bird") by "recalling" previously seen examples ("bat") that are similar to the new class.
- Replaced old training examples with "memories" generated by a DALL-E model fine-tuned on the task.

Machine Learning: Latent Variable Identification

<https://github.com/mx60s/ML-Final-Project>

- Spearheaded a team to create an improved method of decoding a rat's actual position from its neural recordings.
- Enhanced a Deep Variational Autoencoder with additional convolutional layers for processing larger spans of time.