Xijing Wang (Thomas)

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EDUCATION

Santa Clara University — **Santa Clara, CA**

Bachelor of Science: Major in ***Computer Science,*** Minor in ***Economics,*** *GPA: 3.56* — *Sep 2021 - 2025*

Award

The REAL Program: Summer Research Stipend ($4,000) in Santa Clara University — Summer 2024

Skills/ Others

Class/Skill: Intro Neuroscience, Machine Learning, Deep Learning , Data Science, Linux

Programming/library: Python, R, MySQL, C++, HTML/CSS, Javascript , Java, Scala, Go, Keras, Tensorflow, OpenCV

Lab: Cognitive neuroscience, Computational neuroscience, Psychiatry

Lab Experience

Research Assistant in the Lab of Cognitive and Computational Neuroscience**(LCCN)** — **Santa Clara, CA**

PI: *Dr. Lang Chen*

- Processing the database and building **Computational Model** and **DL algorithm** to study neuroscience theories in ASD, such as E/I Imbalance, Internal Noise, etc…
- Conducted **parameter tuning** to optimize computational models, visualized results, and performed **correlation analysis** to link findings with underlying theoretical frameworks.
- Designed **automated algorithms** for dataset preprocessing to meet research objectives, including the automatic generation of **face morphing images** for ASD research, as well as organizing and labeling datasets.
- Preprocessed **ASD brain imaging data** and uploaded it to the High-Performance Computing (**HPC**).
- Lab Website **maintenance** and **design**.

Presentation & Paper

Wang, X., Rios, E., Kalra, A., & Chen, L. Testing the Excitation-Inhibition Imbalance and Internal Noise Theories of ASD and Face Processing in CNN Models

- Poster Presentation: Western Psychological Association, San Francisco, CA, April 27, 2024.
- Manuscript: Currently in **preparation/under review** for publication.

Wang, X., Rios, E., Kalra, A.. (2024, March 23). *Understanding the neurocomputational basis of face recognition difficulties in autistic individuals in CNN models (E/I imbalance)* [Oral presentation]. Lab Blitz 2024, Santa Clara University, Santa Clara, CA.

Research Experience

Testing Neuroscience Theories in CNNs Models | *Python, Tensorflow, Keras, Matplotlib*

Advisor: *Dr. Lang Chen, LCCN Lab*

- Utilized OpenCV for image editing and preparation, ensuring the dataset was appropriately segmented into training and validation subsets.
- Spearheaded the design and construction of **CNN models** from scratch, encompassing methodological design and parameter selection.
- Configure the key parameters of the CNN models, including filter size, activation function, padding, and epochs, as well as input size adjustments, and visualize the result.
- Modified model parameters to specifically test the **E/I imbalance**, **internal noise theories** and **Enhanced Sensory Processing** in the context of CNN models.

Differential and Distributional Privacy, Laplace vs SmallDB | Data Privacy
Advisor: *Dr. Sara Krehbiel*, *Data Privacy and Algorithmic Fairness* (Class)

- Explained the **intricate relationship** between differential privacy and distributional privacy.
- Demonstrated the proof that Distributional Privacy is **strictly stronger** than Differential Privacy.
- Showed that the Laplace Mechanism performed better with **larger database sizes (n)** and SmallDB excelled with **higher query dimensions (k)**, and **the choice of ε** is important when the proportion of **n/k** was in balance.

Analysis of Relationship Between Age Groups and Sleep Quality/Duration with Life Habits | *Python*
Advisor: *Dr. Smita Ghosh, Data Science (Class)*

- Analyzed sleep patterns and lifestyle factors using datasets from Kaggle, focusing on how age affects sleep quality and disturbances, including **Data Preprocessing** steps.
- Utilized advanced data analysis techniques with tools such as **Jupyter Notebook**, **Pandas**, **Seaborn**, **Matplotlib**, and **Scikit-learn** to investigate sleep efficiency, revealing insights into the impact of caffeine, alcohol, and exercise across various age groups.
- Visualized and Extracted patterns and relationships from complex data to develop a function aimed at **Predicting** lifestyle impacts on sleep quality, leveraging **Statistical Analysis** and **Machine Learning** techniques for predictive insights into sleep health improvement strategies.

LEADERSHIP EXPERIENCE

Production Club - Director

- Partnered with a local industrial company to produce a **documentary-style video** showcasing their work and achievements / Winning ***Most Creative*** and ***Best Narration*** **Prizes**