

JOHN LAZZARI

Computational Neuroscience Ph.D Student

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EDUCATION

2019-2023 **Florida State University, B.S. Applied & Computational Mathematics, GPA : 3.82**
2023-present **Yale University, Ph.D Biomedical Engineering**

RESEARCH EXPERIENCE

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| Yale
2023-present | Graduate Research Assistant, SAXENA LAB FOR NEURAL CONTROL,
Advisor : Dr. Shreya Saxena <ul style="list-style-type: none">> Currently utilizing recordings from mice alm and striatum to model the neural dynamics of reward based learning using actor-critic based deep reinforcement learning. |
| UF
Summer 2022 | SURF REU, SAXENA LAB FOR NEURAL CONTROL,
Advisor : Dr. Shreya Saxena <ul style="list-style-type: none">> Trained an RL agent to act as a neuromechanical controller using an existing anatomically accurate mouse musculoskeletal model.> Utilized PCA and CCA to demonstrate strong correlations between learned RNN activity and M1 recordings from real mice during a similar task.> Partnered with NVIDIA to create a massively parallel implementation of this RL task (Omniverse/Isaac Gym, other methods). |
| FSU
2021-2023 | Undergraduate Researcher, DEEP LEARNING GROUP,
Advisor : Dr. Xiuwen Liu <ul style="list-style-type: none">> Evaluating and enhancing assembly embeddings using techniques from NLP such as Transformers and graph neural networks, as well as metric learning.> Analyzed the spectral bias of neural networks through their training dynamics, specifically in low dimensional domains where the bias becomes severe. |
| FSU
2023-2023 | Undergraduate Researcher, COLLEGE OF NURSING,
Advisors : Dr. Hongyu Miao, Dr. Chengdong Li <ul style="list-style-type: none">> Training large language models on data relevant to Alzheimer's disease to enhance patient care.> Utilizing LoRA for efficient fine-tuning of pre-trained LLaMA model on two NVIDIA A4000 GPU nodes. |
| FSU
2020-2021 | Math Research Assistant, FSU MATH DEPARTMENT,
Advisors : Dr. Alex Casella and Dr. Lorenzo Ruffoni <ul style="list-style-type: none">> Developed software within a team of three using Unity and C# in order to visualize triangular structures in Euclidean, Hyperbolic, and Spherical geometries.> Hyperbolic and Spherical structures were created using Moebius rotations in \mathbb{CP}^1.> Program can be found at https://trungler.itch.io/tsv |

PREPRINTS AND PUBLICATIONS

- 2022 S. Biswas, T. Barao, J. Lazzari, J. McCoy, X. Liu and A. Kostandarithes, "Geometric Analysis and Metric Learning of Instruction Embeddings," 2022 International Joint Conference on Neural Networks (IJCNN), Padua, Italy, 2022, pp. 1-8, doi : 10.1109/IJCNN55064.2022.9892426.

PRESENTATIONS

- 2023 NeuroAI Montreal abstract presentation
- 2022 A. Chacon, J. Lazzari, M.N. Almani, S. Saxena, "Evaluating Neural Strategies of Mouse Sensorimotor Control Using Deep Reinforcement Learning," IEEE Engineering in Medicine and Biology Society, Conference on Neural Engineering (IEEE/EMBS NER 2023), 1 page abstract
- 2021 Florida Undergraduate Research Conference Presentation
- 2021 UROP Symposium Presentation
- 2022 Neuromatch 2022

HONORS/AWARDS

- 2022 **UF HWCOE Dean's Research Award**