# AADITYA PRASAD

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## EDUCATION

**University of California, San Diego** September 2022 - (Expected) June 2024
*Masters of Science, Data Science with*
*Specialization in Computational Neuroscience*

**University of California, San Diego** September 2019 - June 2022
*Bachelor of Science, Bioinformatics* GPA: 3.649/4.00
Relevant Courses: Advanced Data Structures, Algorithms, Optimization, Machine Learning, Deep Learning

## EXPERIENCE

**Salk Institute for Biological Studies** November 2021 - Present
*Undergraduate Researcher, Talmo Lab*

- Spearheaded project focused on understanding the role of natural image statistics in the formation of biologically plausible neural representations of **convolutional neural network**(CNN) models of the mouse visual cortex
- Trained **self-supervised** CNNs such as **AlexNet** with **contrastive learning** objectives like **SimCLR** with **PyTorch**, and **torchvision**.
- Mapped the activations of artificial neural networks to biological ones using **partial least squares regression** and compared their similarity with **pearson correlation**

**Jacobs School of Engineering: CSE Department** January 2021 - June 2022
*Computer Science Tutor*

- Tutored CSE 100: **Advanced Data Structures** taught by Professor Niema Moshiri and Paul Cao for 4 consecutive quarters as well as CSE 6R: **Introduction to Computer Science and Object-Oriented Programming: Python** during its first offering
- Lead lab hours for **one-on-one** teaching and helping students with code, **stress-tested** programming assignments and **proof-read** written tests, answered questions on class discussion board
- Taught object-oriented programming in **C++** covering subjects such as **binary trees**, **graph algorithms**, **tries**, and **fast-string searching**.

**Salk Institute for Biological Studies** October 2020 - Present
*Undergraduate Researcher, Manor Lab*

- Currently designing a **deep-learning** based tool using **transformers** for **automatic** multiple objects tracking in biological videos such as animal behavior and live cell microscopy experiments
- Previously, helped build analysis pipeline using **ilastik** and **trackmate** to study the differences in neuronal organelle dynamics in patients with Charcot-Marie-Tooth (CMT) disorder vs unaffected patients
- Leveraged **deep learning** model based on a **U-Net** architecture with a **novel** auxiliary learning tasks known as **local shape descriptors**(LSDs) for **automatic 3d instance and semantic segmentation** of neuronal mitochondrial populations in electron microscopy imaging

**Undergraduate Bioinformatics Club @ UCSD (UBIC)** May 2021 - June 2022
*Vice President External*

- Responsible for overseeing Chalk Talk **seminar series**, bioinformatics **workshops**, **industry recruiting** talks, **community service** events, socials, and **collaborations** with other UCSD clubs.

## TECHNICAL STRENGTHS

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| **Languages** | Python, Java, C++, R, Bash |
| **Libraries & Tools** | Git, PyTorch, Tensorflow/Keras, WandB, Scikit-Learn, Numpy, Pandas, Seaborn, Matplotlib |

## PUBLICATIONS

**Prasad, A.**, Manor, U., & Pereira, T. (2022). Exploring the role of image domains in self-supervised DNN models of rodent brains. *The 4th Shared Visual Representations in Human and Machine Intelligence Workshop at the Thirty-sixth Conference on Neural Information Processing Systems, New Orleans.*