Arnav Gurha

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Education

- **University of California San Diego** *September 2023 - Present*
  B.S. in Biology with Specialization in Bioinformatics, Minor in CSE San Diego, CA
  - GPA: 3.97/4.00
  - Relevant Coursework: Advanced Data Structures and Algorithms, Vector Calculus, Machine Learning in Robotics (Graduate Level Class), Molecular Biology, Genetics, Organic Chemistry, Bioinformatics Lab

Research

- **Hao Su Lab, UCSD [🌐]** *November 2023 - Present*
  Research Assistant San Diego, CA
  - Contributed to ManiSkill which is an open source state of the art robotics bench marking and simulation suite
  - Implemented and deployed reinforcement learning techniques for the purposes of establishing baselines using pytorch, docker, and kubernetes
  - Designed custom parallelized robotics drawing tasks

- **Telese Lab, UCSD [🌐]** *November 2024 - Present*
  Research Assistant San Diego, CA
  - Applied data analysis and visualization techniques to single cell RNA data to further research neuro-psychiatric disorders
  - Used SCVI, Scanpy, Cellbender, Cyto-cipher and AnnData to perform analysis on scRNA-seq data

- **UTHealth, Houston** *September 2021 - September 2022*
  Research Intern Remote
  - Used single-cell protein data analysis to research breast cancer malignancy under the guidance of Dr. Jeffrey T. Chang.

Projects

- **Agrad: Deep Learning Library** *June 2023 - Present*
  Tools: python, numpy [🐙]
  - Developed a custom deep learning library (like pytorch) and automatic differentiation engine from scratch using basic linear-algebra operations
  - Implemented a Large Language Model (LLama) and numerous reinforcement learning techniques with this library

- **nl evo: Modeling Evolution of Crustacean Locomotion patterns with Neural Circuits** *June 2022 - September 2022*
  Tools: python, numpy [🐙]
  - Implemented a neural circuit describing crustacean locomotion in R and python
  - Used reinforcement learning (PPO), genetic algorithms, and gradient descent to simulate how this circuit may have evolved

Publications/ Preprints

1. Tao, Stone ... **Gurha, Arnav** et al.(2024) "ManiSkill3: GPU Parallelized Robotics Simulation and Rendering for Generalizable Embodied AI." Robot Learning Workshop at ICLR 2025, Oral Presentation (15th of 20 authors) .

Activities and Awards

- **Micromouse Team Lead** *Feb 2024 - Present*
  UCSD Micromouse
  - Led development of hardware and embedded software for maze solving micromouse robot and competed in the All American Micromouse Competition
- **MIT Battlecode Finalist** *January 2024 - Present*
  MIT BattleCode [🌐]
  - Worked in a team to program a virtual robot to compete against other teams from around the world in a competitive strategic game.
  - Qualified for final round and came 13th place out of 150+ US college teams.

Additional Information

Languages: English, Hindi (Conversational)
Interests: Deep Learning, Embodied AI, Reinforcement Learning, Systems Biology, Single-cell omics research