

# Arth Shukla

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## Education

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<b>PhD Computer Science</b> <i>Hao Su Lab @ University of California, San Diego</i>	2025 – present
<b>B.S. Mathematics – Computer Science</b> <i>University of California, San Diego</i>	2021 – 2024 GPA: 4.0

## Publications / Preprints

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### **ManiSkill-HAB: A Benchmark for Low-Level Manipulation in Home Rearrangement Tasks.**

International Conference on Machine Learning (ICLR) 2025.

Arth Shukla, Stone Tao, Hao Su.

[arXiv](#) | [project page](#)

### **ManiSkill3: GPU Parallelized Robotics Simulation and Rendering for Generalizable Embodied AI.**

Preprint, arXiv 2024.

Stone Tao, Fanbo Xiang, **Arth Shukla**, Yuzhe Qin, Xander Hinrichsen, Xiaodi Yuan, Chen Bao, Xinsong Lin, Yulin Liu, Tse-kai Chan, Yuan Gao, Xuanlin Li, Tongzhou Mu, Nan Xiao, Arnav Gurha, Zhiao Huang, Roberto Calandra, Rui Chen, Shan Luo, Hao Su.

[arXiv](#) | [project page](#)

### **Reverse Forward Curriculum Learning for Extreme Sample and Demo Efficiency.**

International Conference on Machine Learning (ICLR) 2024.

Stone Tao, **Arth Shukla**, Tse-kai Chan, Hao Su.

[arXiv](#) | [project page](#)

## Experience

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**Hillbot**, Research Scientist Intern, Advisor: Hao Su 2024 – present

- Robot learning, manipulation, vision, simulation

**UC San Diego: Hao Su Lab**, Research Assistant, Advisor: Hao Su 2023 – present

- Scaling RL training and data collection with GPU-accelerated simulation environments
- Humanoid loco-manipulation and real-world transfer
- Mobile manipulation, simulation, benchmarks

**Nefeli Networks (now under Cloudflare)**, Software Engineering Intern 2023

- Integrate Infracost API in backend for Terraform cloud object cost and diff calculation
- Code used in production (23.09 release)

**Bittner Development Group**, Software Engineering Intern 2019 – 2023

- Web development, devops, and QA for internal component library and enterprise web applications with React
- Manage and train two interns to complete projects using React and SCSS, GitLab, Git, and WSL

## Selected Projects

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**ManiSkill-HAB ★100+** 2024 – present

GPU-accelerated implementation of the HAB which supports realistic low-level control, extensive RL and IL baselines, and a rule-based trajectory filtering system which enables efficient, controlled data generation at scale.

[arth-shukla/mshab](https://arth-shukla/mshab)

## Leadership

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**Element.AI Competition**, Lead Developer 2024

Lead dev team to create competition environment, Python and Java SDKs, and use Squid proxy, IPTables and bash scripts to create instructor tools to manage the competition accounts and data access. Write proposals and attend meetings to obtain \$10,000 in sponsorships, attracting 200 participants.

**ACM AI at UCSD**, President 2023 – 2024

Build AI competitions (100-200 submissions on average), run events (technical workshops, seminars, socials), and lead AI Board. Previously Director of Operations 2022-23, Event Lead 2021-22, ACM Projects Participant 2021.

## Student Mentees

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Iha Gadiya (B.S. UC San Diego) 2024 – present

## Service

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**Peer Review**

AI/ML: ICLR 2025

## Awards

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**Summa Cum Laude** 2024

**UCSD Undergraduate Provost Honors List** 2021 – 2024

## Other Projects

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**Densefusion for 6D Pose Estimation Challenge** 2023

Win **1st place** in 6D Pose Estimation competition in graduate-level course *Deep Learning for 3D Data* by implementing DenseFusion with altered loss + ICP Refinement.

[arth-shukla/densefusion](https://arth-shukla.github.io/densefusion)

**PPO Mario** 2023

Create PPO Agent to consistently beat Mario level 1-1 and 1-4 in under 1600-2000 episodes of training.

[arth-shukla/ppo-mario](https://arth-shukla.github.io/ppo-mario)

**Pointnet Part Segmentation** 2023

Implement *PointNet: Deep learning on point sets for 3d classification and segmentation* (Qi et al. 2017) for part segmentation on chair point clouds.

[arth-shukla/pointnet-part-segmentation](https://arth-shukla.github.io/pointnet-part-segmentation)

**DDQN Mario** 2023

Implement DDQN from *Human-level control through deep reinforcement learning* (Deep Mind 2015) in Gymnasium to beat Mario level 1-1 in 13000 episodes of training.

[arth-shukla/ddqn-mario](https://arth-shukla.github.io/ddqn-mario)

**SQuAD 2.0 Question-Answer Finetuning** 2023

Use HuggingFace Transformers library to fine-tune DistilBERT model trained on Stanford Question-Answer 2.0 (SQuAD 2.0) to answer a question given some context (article, paragraph, etc).

[arth-shukla/squad2.0-bert-question-answer](https://arth-shukla.github.io/squad2.0-bert-question-answer)

**PPO Cartpole** 2023

Train PPO Agent to consistently beat CartPole in under 140 episodes.

[arth-shukla/ppo-gym-cartpole](https://arth-shukla.github.io/ppo-gym-cartpole)

### **Sentiment140 DistilBERT Transfer Learning**

2023

Fine-tune DistilBERT to classify and approximate sentiment for Stanford Sentiment140 1.4-million Tweet Dataset.

[arth-shukla/sentiment140-bert-transfer-learning](https://github.com/arth-shukla/sentiment140-bert-transfer-learning)

### **IMDB Sentiment Classification with Word Embeddings**

2023

Use TensorFlow Keras to build LSTM and CNN and use Gensim to refit GLoVE word embeddings for IMDB Review Sentiment Classification.

[arth-shukla/gensim-embedding-training-imdb](https://github.com/arth-shukla/gensim-embedding-training-imdb)

## **Skills**

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**Programming Languages:** Python, C++, Go, TypeScript/JavaScript, Java, Bash, C, Ruby

**AI:** Embodied AI, Reinforcement Learning, Imitation Learning, 2D/3D Computer Vision, Deep Learning

**Frameworks:** Pytorch, Tensorflow/Keras, Pandas, Scikit, React, Angular, Node

**Tools:** Docker, Kubernetes, GCP, Jupyter, Git