Arth Shukla

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Education

B.S. Mathematics – Computer Science   2021 – 2024
University of California, San Diego   GPA: 4.0

Publications / Preprints

ManiSkill-HAB: A Benchmark for Low-Level Manipulation in Home Rearrangement Tasks.
In Submission.
Arth Shukla, Stone Tao, Hao Su.
arXiv TBA | project page

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

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 Cloudfare), 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

ManiSkill-HAB   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

Leadership

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

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

Service

Peer Review

AI/ML: ICLR 2025

Awards

Summa Cum Laude   2024
UCSD Undergraduate Provost Honors List   2021 – 2024

Other Projects

Densefusion for 6D Pose Estimation Challenge   2024

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

PPO Mario   2024

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

arth-shukla/ppo-mario

Pointnet Part Segmentation   2024

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

DDQN Mario   2024

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

SQuAD 2.0 Question-Answer Finetuning   2024

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

PPO Cartpole   2024

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

arth-shukla/ppo-gym-cartpole

Sentiment140 DistilBERT Transfer Learning 2024

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

arth-shukla/sentiment140-bert-transfer-learning

IMDB Sentiment Classification with Word Embeddings 2024

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

Skills

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