Abhishek Joshi

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EDUCATION

Princeton University **GPA: 4.0/4.0**
M.S. in Computer Science August 2024 – May 2026

University of Texas at Austin **GPA: 3.935/4.0**
B.S. Honors in Computer Science (Turing Scholars Program), Mathematics August 2020 – May 2024

Coursework: Advanced Computer Vision, Honors Principles of Machine Learning, Honors Autonomous Vehicles, Neural Networks, Natural Language Processing, Spatial Computing, Honors Operating Systems, Honors Computer Architecture, Honors Data Structures

WORK EXPERIENCE

Google DeepMind **Remote (Austin, TX)**
***Research Engineering Contractor**, MuJoCo Team* August 2023 – October 2024

- Led effort on exporting **MuJoCo trajectories to USD format** for external renderers such as Omniverse and Blender.
- Actively developing support to **maintain kinematic tree** while exporting to USD and **PBR materials** for MJCF-to-USD tool.

Amazon Web Services **Redmond, WA**
***Software Engineering Intern**, AWS Aurora Team* May 2023 – August 2023

- Developed internal memory management tool in **C** to identify crucial memory leaks within minutes for **PostgreSQL** engine.
- Created automation suite to **analyze current PostgreSQL tests** using tool to identify potential memory-related issues.
- Designed automation scripts in **Python** to allow engineers to cherry pick commits from open source to internal code base.

Paycom **Grapevine, TX**
Software Engineering Intern May 2022 – August 2022

- Spearheaded reporting and time tracking full stack application using **C#**, **React.js**, and **MySQL** to organize teams' agile sprints.
- Led efforts to build new API for storing client preferences for viewing organizational charts using **PHP**, **JavaScript**, and MySQL.
- Awarded MVP at company codeathon for leading team, managing full tech stack, and handling application deployment.

RESEARCH EXPERIENCE

Princeton Vision and Learning Lab **Princeton, NJ**
***Advisor: Dr. Jia Deng**, Graduate Researcher* August 2024 – Present

- Actively **leading** research project on **procedural asset generation**.
- Actively contributing to research efforts on **tactile sensing** and **robotic demonstration collection**.

Robot Perception and Learning Lab **Austin, TX**
***Advisor: Dr. Yuke Zhu**, Undergraduate Researcher, Core Member of Robosuite Team* September 2020 – June 2024

- Integrated **USD generation** to the **Robosuite simulation framework** resulting in higher quality visual training data.
- Defined diverse tasks and collected several demonstrations in simulation and real-world (**over 700 total**) for **RoboCasa** effort.
- Conducted and debugged models for many simulation and real-world **co-training experiments** on physical Frank Panda robot.
- Contributed to writing **transformer policy** and running baseline experiments for the **VIOLA** effort.
- Verified Robosuite **environment creation** via unit tests for different robot models, bases, and controllers for Robosuite v1.5.
- **Automated asset generation** using convex decomposition tools and created MuJoCo-compatible version of HOPE dataset.
- Wrote **ray-tracing wrapper** using **NViSII** to collect photorealistic images for training offline models in Robosuite.
- Developed **CI/CD pipelines** for automating documentation updates and PyPI releases for Robosuite.

PAPERS

[1] S. Nasiriany, A. Maddukuri, L. Zhang, A. Parikh, A. Lo, **A. Joshi**, A. Mandlekar, Y. Zhu. RoboCasa: Large-Scale Simulation of Everyday Tasks for Generalist Robots. In *Robotics: Science and Systems*, 2024.

[2] **A. Joshi**, Y. Zhu. Utilizing Diverse and Scalable Simulation for Mobile Manipulators in Human-Centric Environments. *University of Texas at Austin Undergraduate Honors Thesis*, 2024.

[3] Y. Zhu, **A. Joshi**, P. Stone, and Y. Zhu. Viola: Imitation learning for vision-based manipulation with object proposal priors. In *Conference on Robot Learning*, pp. 1199–1210. PMLR, 2023b.

[4] Y. Zhu, J. Wong, A. Mandlekar, R. Martín-Martín, **A. Joshi**, S. Nasiriany, and Y. Zhu. Robosuite: A modular simulation framework and benchmark for robot learning. In arXiv preprint arXiv:2009.12293, 2020.

SKILLS

Programming Languages: Python, C++, C, Java, R, JavaScript, Swift, CMake, Verilog, LaTeX, SQL, HTML, CSS
Tools/Frameworks: MuJoCo, Isaac Lab, Omniverse, USD, Blender, PyTorch, NumPy, AWS, MongoDB, Postgres, Linux, React.js, GDB