

Abhinav Jain

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EDUCATION

Oregon State University

Sep 2021 - Aug 2026

PhD, Major - Robotics. Minor - Artificial Intelligence

Corvallis, OR, USA

Advisors: [Dr. Cindy Grimm](#) and [Dr. Stefan Lee](#)

Courses: Deep Learning, Learning Based Control, Natural Language Processing, Kinematics/Dynamics

GPA: 3.91/4

Sardar Vallabhbhai National Institute of Technology

Aug 2016 – Jul 2020

Bachelor's of Technology, Electronics and Communication Engineering

Surat, India

Seminar: Generative techniques to generate artificial datasets

Capstone: Birding - GANs to convert text description to bird images.

EXPERIENCE

[Oregon State University](#)

Dec 2021 - Present

Graduate Research Assistant - Robotic tree pruning

OR, USA

- Funded under [AgAID](#) grant, a collaboration of stakeholders in AI and Agriculture.
- Built a learning pipeline to perform the task of robotic tree-pruning and dexterous apple-picking using learning based methods. This pipeline included simulation design, reinforcement learning, synthetic data generation for imitation learning and image segmentation, and ROS2 implementation to run the robot in the real world.

Reinforcement Learning

- Applied **Deep Reinforcement Learning** algorithms such as PPO to train a **servoing** policy for a UR5 manipulator. The policy used images as input to reach pruning points while avoiding collisions and maintaining correct orientation. Proficient with Stable Baseline 3 and SKRL
- Developed a novel hybrid RL method to incorporate **suboptimal expert data** into an online reinforcement learning framework and benchmarked it against **Imitation Learning** to outperform it.
- Currently working on dexterous manipulation to perform the task of apple-picking

Simulation

- Built a procedural tree generation tool which incorporates tying down and pruning branches as in an orchard [TreeSim.Lpy](#) in **Python** to build visually similar 3D meshes.
- Used spring-mass-damper system in Newton physics engine to make deformable plants
- Built domain randomization within the simulation to hand sim-to-real gap

Robotics

- Implemented the learned policy on a real UR5 arm with **ROS2**, **MoveIt!** and **Behavior Trees**.
- Tested in a real orchard by running the policy real time to show transfer from **simulation to real-world**.
- Benchmarked performance of RL policy by running **RRT-Connect** in the real-world using point clouds.

[AgRobotics](#)

Jun 2025 - Sep 2025

Robotics Engineer Intern

CA, USA

- Building the future of Agricultural Robots
- Deformable object simulation in Isaac Sim
- Image auto-labelling using SAM2 and YOLO

[Samsung Research Institute, Bangalore](#)

Jan 2021 - Aug 2021

Engineer

Bangalore, India

- Employed as an engineer in 5G NR MAC team.

- Wrote **Unit Tests** and **Block Tests** according to Google Test framework and increasing test coverage metric from 2.1 to 3.2, beyond required threshold of 3.
- Awarded Software Professional Certification for skills in **Data Structure and Algorithms**.

[RBCCPS LAB, Indian Institute of Science \(IISc\)](#)

Jul 2020 – Jan 2021

Research Intern

Bangalore, India

- Worked in Robert Bosch Centre for Cyber-Physical Systems, IISc Bangalore, under [Dr. Chiranjeeb Bhattacharyya](#).
- Adapted state-of-the-art models of Image Inpainting in **PyTorch** to the problem of Dynamic to Static LiDAR Reconstruction. Used **ROS** to run **SLAM** on reconstructed **LiDAR** output obtained to evaluate the quality of reconstruction.
- Proposed the metric "LiDAR Quality Index", which ranked the quality of a LiDAR frame without any reference ground truth.

PUBLICATIONS

Abhinav Jain, Cindy Grimm, Stefan Lee. "Visuomotor Robotic Pruning in Planar Orchards Using Hybrid Reinforcement Learning" (In review) [\[Paper\]](#)

Tieqiao Wang, **Abhinav Jain**, Sinisa Todorovic, Cindy Grimm. "A Dataset for Semantic and Instance Segmentation of Modern Fruit Orchards" [CVPR V4A Workshop \(Vision for agriculture\)](#) [\[Paper\]](#)

Abhinav Jain, Cindy Grimm, Stefan Lee. "Learning to Prune Branches in Modern Tree-Fruit Orchards." [\(ICRA 2025\)](#) [\[Paper\]](#)

Deanna Flynn, **Abhinav Jain**, Heather Knight, Christina G. Wilson, Cindy Grimm. "Integrating Stakeholder Perspectives into Robot Pruning Designs". In review [\[Paper\]](#)

Abhinav Jain¹, Dhruv Patel¹, Kalpesh Prajapati, K.P. Upla. "SRTGAN: Triplet Loss based Generative Adversarial Network for Real-World Super-Resolution". [CVIP 2022](#)

Prashant Kumar¹, Sabyasachi Sahoo¹, Vanshil Shah, Vineetha Kondameedi, **Abhinav Jain**, Akshaj Verma, Chiranjib Bhattacharyya, Vinay V. (Sep 2020). "DSLRL: Dynamic to Static LiDAR scan Reconstruction using adversarially trained autoencoder". [AAAI Conference on Artificial Intelligence 2021](#) (conference submission) [\[web-page\]](#)

OTHER FUN STUFF

Graduate Research Showcase - A TedX-like event where I presented my research [\[Video\]](#)

Volunteer editor for the 100 page LLM book [\[Link\]](#)

Robotics Grad Student Association @OSU - President (2023-2024)

Scavenger hunt using Fetch Robot [\[Video\]](#)

Predicting upcoming Coronavirus Hotspots - Analytics Vidhya [\[Blog Post\]](#)

DotSlash Hackathon: Runners up. Jyoti- An assistant for people with vision impairment. [Github](#)

Robocon 2020: Secured **12th** rank out of 120 participating teams. Video:(Blue Team) [\[Video\]](#)

TECHNICAL SKILLS

Languages: Python, C, C++, Embedded C, Git

Frameworks: Flask, W&B, PyTorch, TensorFlow, Keras, ROS2

Libraries: pandas, NumPy, Matplotlib, OpenCV, MoveIt!

Robots worked with: Fetch, TurtleBot, UR5, Franka Panda PR3, XArm7, Amiga FarmNG

¹Equal Contribution