

Yash Jangir

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EDUCATION

Carnegie Mellon University <i>Master of Science in Robotics</i>	Aug. 2024 – Present GPA : 4.17/4.33
Advisors: Prof. Katerina Fragkiadaki and Prof. Yonatan Bisk	
Birla Institute of Technology and Science Pilani <i>Bachelor of Engineering in Electronics and Instrumentation Engineering</i>	Aug. 2019 – Aug, 2023 GPA : 8.44/10
Thesis Title: Visual Servoing for Aerial Manipulation Using Fully Actuated UAVs. Advisor: Prof. Sebastian Scherer (CMU)	

RESEARCH INTERESTS

Embodied AI, Robot Learning, Real-to-Sim, Vision-Language-Action Models, 3D Perception, World Models

PUBLICATIONS

- [1] **Yash Jangir**, Yidi Zhang*, Kashu Yamazaki*, Chenyu Zhang*, Kuan-Hsun Tu, Tsung-Wei Ke, Lei Ke, Yonatan Bisk, and Katerina Fragkiadaki. **RobotArena ∞ : Unlimited Robot Benchmarking via Real-to-Sim Translation**. Preprint, 2026. [\[Under Review\]](#) [\[Project Page\]](#) [\[arXiv\]](#)
- [2] Guanqi He*, **Yash Jangir***, Junyi Geng, Mohammadreza Mousaei, Dongwei Bai, and Sebastian Scherer. Image-based visual servo control for aerial manipulation using a fully-actuated UAV. In IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS). IEEE, 2023 [\[Paper\]](#)
- [3] Pranay Mathur, **Yash Jangir**, and Neena Goveas. A generalized kalman filter augmented deep-learning based approach for autonomous landing in MAVs. In 2021 International Symposium of Asian Control Association on Intelligent Robotics and Industrial Automation (IRIA), pages 1–6, 2021 [\[Paper\]](#) (Best Paper Award)
- [4] Prathamesh Saraf, **Yash Jangir**, and R.N. Ponnalagu. Implementation and testing of force control on a spherical articulated manipulator. In 2022 IEEE International Conference on Mechatronics and Automation (ICMA), pages 755–760, 2022 [\[Paper\]](#) (Finalist Best Paper Award)
- [5] Kaushal Kishore, Sagar Dalai, **Yash Jangir**, Samarth Singh, M Rohan, D Shashank, Sree S S Katta, and S K Saha. 3d pure pursuit guidance of drones for autonomous precision landing. In 2022 13th Asian Control Conference (ASCC), pages 2218–2222, 2022 [\[Paper\]](#)

AWARDS, INVITED TALKS AND SERVICE

- Invited Talk at **1X Robotics** on *Scaling VLA Evaluation via Real-to-Sim*
- Invited Talk at **NVIDIA Robotics** on *RobotArena ∞ : Unlimited Robot Benchmarking via Real-to-Sim Translation*
- Selected as one of 50 students worldwide for the **Robotics Institute Summer Scholars (RISS) Program**, CMU
- **Best Paper Award**, IEEE IRIA 2021
- **Best Paper Finalist**, IEEE ICMA 2022
- Reviewer: Conference on Robot Learning (CoRL), IEEE Transactions on Pattern Analysis and Machine Intelligence

EXPERIENCE

Robotics, Embodied AI and Learning (REAL) Center, Carnegie Mellon University <i>Graduate Research Assistant, Advisors: Prof. Katerina Fragkiadaki and Prof. Yonatan Bisk</i>	Sept 2024 – Present Pittsburgh, PA
<ul style="list-style-type: none">• Built an end-to-end Real-to-Sim pipeline converting robot demonstration videos into physically consistent simulation environments.• Developed robustness-evaluation tools with controllable object pose, clutter, and texture to stress-test generalist VLA models (Octo, RoboVLM, Spatial-VLA, CogACT, Pi-0/0.5, MolmoAct).• Designed a unified evaluation suite combining simulation rollouts, VLM-based scoring, and human-preference models for consistent cross-task policy benchmarking.	

Clutterbot Technologies Pvt. Ltd.

June 2023 – June 2024

Robotics Software Engineer I Bengaluru, India

- Built a pyramidal LiDAR scan-matching for global localization, improving relocalization accuracy by 50% and enabling real-time relocalization.
- Developed a complete calibration suite (fisheye intrinsics, ground-plane alignment) to standardize robot field deployment.

- **Project Title: CHAMP: Collaborative Heterogeneous Autonomy for Multi-Domain Platforms**
- Designed state-estimation + control algorithms for fully-actuated UAVs performing manipulation on marine platforms.
- Built an AprilTag perception pipeline + PID control loop for robust autonomous takeoff/landing in GPS-denied conditions.
- Created high-fidelity ROS/Gazebo simulations + real-world tests; integrated into AirLab's autonomy stack.
- **Project Title: Image-based visual servo control for aerial manipulation [Paper IROS 2023]**
- Designed a visual-servo framework for GPS-denied aerial manipulation using edge-based RGB-D features. Built ROS/Gazebo simulations and deployed on a hexacopter with Intel RealSense.

SELECTED PROJECTS

ImagineAct: Closed-Loop Vision-Language-Action with World Modeling [Github]	Sept 2025 – Present
<ul style="list-style-type: none"> • Built a diffusion-based world model trained on LIBERO dataset to predict future states conditioned on actions. • Learned proxy video-based rewards using Randomized Return Decomposition (RRD) to supervise an actor-critic policy. • Built an RL pipeline for fine-tuning VLAs with a world model and learned reward model to improve OOD generalization. 	
SpatialPi: Forcing Spatial Priors in Vision-Language-Action Models [Github]	Sept 2025 - Present
<ul style="list-style-type: none"> • Added explicit 3D geometric priors to VLA action heads, improving spatial reasoning and increasing success rates on LIBERO. Reconstructed consistent 3D point clouds using VGGT and fused them into VLA action modules for improved geometric grounding. 	
ReMov3r: Real-Time Monocular Video to 3D Reconstruction [Github]	Sept 2024 - Dec 2024
<ul style="list-style-type: none"> • Developed a transformer-based monocular 3D reconstruction model incorporating cross-attention feature fusion and hierarchical spatio-temporal state representations for improved geometric consistency and reconstruction quality. • Achieved competitive results vs CUT3R & SLAM3R on ScanNetV2 and 7-Scenes by improving camera-trajectory estimation via adaptive keyframes. 	
3D Scene Inpainting with Text-to-Image Models and ControlNet [GitHub]	Oct 2025 - Nov 2025
<ul style="list-style-type: none"> • Built a ControlNet-based 3D inpainting model using Stable Diffusion for high-fidelity, mask-conditioned scene completion. • Applied to robot datasets (BridgeV2) to repair occlusions, improving multi-view consistency for Real-to-Sim reconstruction. 	
Deep-Learning based Autonomous Landing for MAVs [Paper - Best Paper Award]	May 2021 - June 2022
<i>Advisor: Prof. Neena Goveas, Professor, Department of Computer Science</i>	BITS Pilani, Goa Campus, India
<ul style="list-style-type: none"> • Developed a marker-free landing pipeline using Faster-RCNN + Kalman filter + PID control for autonomous takeoff/landing. Integrated visual detection with onboard state estimation, enabling robust landing without fiducials. 	
Articulated Robotic Manipulator: Modeling & Control [Paper - Best Paper Finalist] [Github]	May 2021 - July 2021
<i>Advisor: Dr. Ponnalagu R N, Assistant Professor, Department of EEE</i>	BITS Pilani, Hyderabad Campus, India
<ul style="list-style-type: none"> • Implemented PID, LQR, and impedance controllers on a modified 3-DoF KUKA IIWA model. Reduced dynamic model parameters by 30% using RREF simplification, improving stability and disturbance tolerance. 	

SKILLS

Languages: Python, C/C++, MATLAB, Bash

Frameworks and Libraries: PyTorch, TensorFlow, NumPy, SciPy, OpenCV, Open3D

Robotics: ROS/ROS2, Gazebo, Isaac Sim, PyBullet, Genesis

Simulation & Control: MuJoCo, Isaac Gym, MATLAB/Simulink, PID/LQR/Impedance Control

Tools: CUDA, Docker, Git, Linux, SLURM, LaTeX