# AMAN TAMBI

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## EDUCATION

**Carnegie Mellon University** — Pittsburgh, PA
Master of Science – Robotic Systems Development — May 2027
*Current Relevant Coursework:* Manipulation, Estimation & Control; Robot Mobility on Air, Land & Sea; Adv. Computer Vision
*Scholarships:* K.C. Mahindra Education Trust (KCMET)

**Birla Institute of Technology & Science, Pilani** — Pilani, India
Bachelor of Engineering – Manufacturing Engineering | GPA: 8.69/10 — May 2023
*Relevant Coursework:* Robotics; Autonomous Mobile Navigation; Automation and Control

## WORK EXPERIENCE

**Addverb** — Noida, India
*Robotics Engineer* — Jan 2025 – Jun 2025
- Collaborated on development, implementation, and testing of model predictive control utilizing centroidal dynamics, resulting in stable quadruped locomotion at 0.5-1.0 m/sec on flat terrain.
- Utilized Isaac Lab to simulate robotic environments and train deep reinforcement learning policies (PPO) using PyTorch, performing sim-to-real transfers of learned controls onto physical Trakr quadruped.
- Represented Addverb to demonstrate Trakr quadruped to the Prime Minister of India.

**Indian Institute of Technology, Delhi** — Delhi, India
*Project Scientist (Robotics Researcher)* — May 2023 – Dec 2024
- Developed a Robot Operating System (ROS) based autonomy stack combining visual/audio perception with task and motion planning; demonstrated zero-shot task completion in unseen assistive settings on Franka Emika Panda and Hello Robot Stretch.
- Conceptualized G2TR, a factored pipeline for grounded temporal reasoning (event localization → spatial grounding → semantic tracking), achieving 70.1% grounding accuracy (+26% vs. baselines) on 155 video–instruction pairs.
- Built an open set, zero-shot and dynamically updatable scene-graph generation pipeline using foundation models with focused attention – F1=0.95(+0.16 v/s best baseline), stronger relation extraction and aided long horizon planning.
- Enhanced 3D model creation by fusing masks from visual language models + monocular-depth priors with multi-view point clouds. Demonstrated collision-free sequential manipulation in unstructured scenes with UR5 on a Husky base.

## INTERNSHIP EXPERIENCE

**Miko Robotics** — Mumbai, India
*Mechanical Intern* — Jan 2023 – May 2023
- Contributed to design and development of Miko-mini, a 3-wheeled mobile companion robot for children.
- Performed Euler–Lagrange dynamic analysis of elliptical-trammel wheel-lift in a 4-wheeled robot; found installed motor was 30% under-torqued, informing re-spec.
- Established that plastic-geared DC motors meet performance targets at lower cost vs. metal-geared alternatives through speed–torque, durability, acoustic, and thermal tests.

**Systemantics** — Bengaluru, India
*Robotics Intern* — May 2022 – Aug 2022
- Validated sensorless momentum-observer based kinesthetic teaching on J1–J3 of a 6-DOF manipulator, enabling compliant cartesian motion without a force/torque sensor.
- Designed and modeled a 3-finger cam-synchronized parallel gripper in Fusion 360; 2.5 kg rated payload.
- Configured an existing custom robotic arm into the MoveIt pipeline, integrating ros_control for hardware communication, setting up kinematics and collision checking, and enabling full trajectory planning and execution.

## PUBLICATIONS

Arora, R., Narendranath, N., **Tambi, A.**, Zachariah, S. S., Chakraborty, S., & Paul, R. *"G2TR: Generalized Grounded Temporal Reasoning for Robot Instruction Following by Combining Large Pre-Trained Models"*. arXiv preprint (2024). [Submitted].

**Tambi, A.**, Zachariah, S. S., Paul, R., Malhotra, M., & Rao, P. V. M. *"Generating Multi-hierarchy Scene Graphs for Human-instructed Manipulation Tasks in Open-world Settings"*. ICRA 2024 Workshop on Mobile Manipulation and Embodied Intelligence.

Malhotra, M., **Tambi, A.**, Zachariah, S. S., Paul, R., & Rao, P. V. M. *"Incorporating Foundation Model Priors in Modeling Novel Objects for Robot Instruction Following in Unstructured Environments"*. ICRA 2024 Workshop on 3D Visual Representations for Manipulation.

## SKILLS

**Programming Languages:** Python, C++, MATLAB
**Frameworks:** ROS/ROS 2 (MoveIt, Nav2), PyTorch, Isaac Lab, MuJoCo, Gazebo, Fusion360
**Hardware:** Trakr Quadruped, Franka Emika Panda manipulator, Clearpath Husky, UR5 manipulator, Hello Robot Stretch 3