# VAMSI GRANDHI

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## EDUCATION

**Carnegie Mellon University** *Pittsburgh, PA*
*Master of Science in Robotic Systems Development* *May 2028*
- **Relevant Coursework:** Robot Mobility, Robot Autonomy, Deep Learning

**Nanyang Technological University (NTU)** *Singapore*
*Bachelor of Engineering in Mechanical Engineering with Honours (Highest Distinction)* *Jun 2022*
- Robotics and Mechatronics Specialization: Selected among the top 10% for early-entry specialization
- CGPA: 4.61/5.0 | Dean's List Scholar, Academic Year 19/20 (Top 5% in a class)
- Conference Publication: Grandhi, Vamsi. "Open Access in Educational Research: Insights from Large-scale Analysis in the Past 40 Years." 2022 Annual Meeting of the American Educational Research Association, San Diego, CA, 21 April 2022

## SKILLS

**Robotics:** ROS1, ROS2, Path Planning, Control Systems, Sensor Fusion
**Tools:** Git, Docker, Linux, Bazel, CMake, GTest, Gazebo, PyTorch, SolidWorks, Fusion 360
**Programming Languages:** C++, C, Python

## WORK EXPERIENCE

**Venti Technologies | C++, ROS2, Path Planning, Sensor Fusion, Bazel, Linux** *Singapore*
*Senior Software Engineer, Planning and Control Team* *Jul 2025 – Aug 2026*
- **Engineered perpendicular parking for a non-holonomic truck-trailer system**, resolving perception, localization, and control integration issues; optimized Hybrid A* heuristics and costmaps, reducing planning time from 60s to <500ms
- Implemented **dynamic reverse path planning**, a core planning capability for a $1M+ pilot deployment in the USA, extending Venti's autonomy stack to a new market and traffic environment

*Software Engineer, Planning and Control Team* *Jul 2022 – Jul 2025*
- Spearheaded Hybrid A* path planning for non-holonomic **truck-trailer overtaking maneuvers at unsignalized junctions** in a mixed-traffic port environment, reducing operator interventions by 15%
- Built an **intelligent route recommendation system** using live sensor feeds and a proprietary remote-operations interface, decreasing vehicle stalls and improving uptime by 9.89%
- Co-developed a **remote operations system** in a 3-member team spanning UI, planning, perception, and localization, using MQTT and Cap'n Proto for real-time autonomous vehicle monitoring, accelerating driverless production deployment
- Managed **software integration** of Venti's autonomy stack at the world's largest transshipment hub by co-designing with the Port of Singapore Authority (PSA), contributing to the majority of 2024 company revenue

**Panasonic R&D Center | ROS1, ROS2, Path Planning** *Singapore*
*Research Intern, Autonomous Mobile Robot Navigation* *Jan 2021 – Aug 2021*
- Accelerated an autonomous wheelchair's ROS1-to-ROS2 migration from a 6-month estimate to 2 months; integrated ROS2 Navigation2 with **region-based speed regulation** on a medication-delivery 1.3m-tall AMR (Hospi robot)

## PROJECTS

**Humanoid Whole-Body Locomotion** *Sep 2026 – Present*
- Working on whole-body locomotion for a Unitree G1 in collaboration with FieldAI as a graduate capstone project, supporting autonomous stair traversal and tool manipulation while exploring perception and humanoid control

**MLP-based Phoneme Classification** *Aug 2026 - Sep 2026*
- Built and optimized a PyTorch MLP for frame-level phoneme classification using contextual log-mel spectrograms and hyperparameter ablations; achieved **32nd/324 (~top 10%)** on Kaggle

**NTU Final Year Project (Honours)** *Aug 2021 – May 2022*
- Developed a Python-based multivariate regression gravity-compensation algorithm for the HEBI X5-4 actuator, achieving 98.9% accuracy, reducing trajectory error by 67%, and enabling safer human-robot interaction at 50% position gain

## LEADERSHIP & AWARDS

- **NTU Robotics Club President:** Trained 8 committee members to organize a 16-week NASA Lunar Challenge, judged by astronaut Jeffrey Williams, drawing 120+ participants and forging partnerships that boosted funding by 300%
- **NASA Space Apps Challenge:** 1st place in Singapore; top 430 globally for UAV real-time code injection
- **NUS Space Out Hackathon:** 2nd place for rover design with hybrid suspension and satellite localization