Nandagopal Vidhu

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Education

University of Pennsylvania, MS in Robotics, GPA: 3.95 (Out of 4) **Aug 2025 – May 2027**
$58K merit scholarship (JN Tata Endowment Fund & Narotam Sekhsaria Foundation)

IIT Bombay, B.Tech in Mechanical Engineering, GPA 3.93 (Out of 4) **Jul 2018 – May 2022**
Bachelor's Thesis Research Award (top 11 of 1,000+); Narotam Sekhsaria UG Scholarship

Technical Skills

Programming: C++ (modern C++17, real-time), Python, JAX, PyTorch, ROS 2

Control & Planning: MPC, MPPI, LQR, trajectory optimization, RL, RRT

Perception & Estimation: SLAM, particle-filter localization, sensor fusion (GNSS-RTK/INS, LiDAR, camera), state estimation

Systems & Deployment: NVIDIA Jetson, TensorRT, HIL/SiL testing, Isaac Sim, MuJoCo

Work Experience

Built Robotics | Robotics Engineer Intern **Jun – Aug 2026**
Autonomous Ground Robot for Solar Site Surveys · Philadelphia, PA, USA

- Led end-to-end development of a 1/5-scale autonomous survey vehicle from bare chassis to field deployment, replacing manual surveys with 12× faster data collection.
- Ported and optimized an AI personnel-detection model for real-time inference on Jetson Orin AGX to enable emergency braking.
- Designed a ROS 2 motion planner and MPPI controller (Python/JAX) that generated curvature-feasible paths and tracked them at 34 Hz.
- Diagnosed and eliminated a 3.2 Hz steering oscillation (cross-track error reduced from 35 cm to 9 cm); fused RTK-GNSS/INS + ToF for 1.9 cm elevation accuracy.

Jaguar Land Rover TBSI | Systems Engineer **Jul 2022 – Aug 2025**
Active Suspension Controls & Seating Systems Validation · Bangalore, India

- Developed and validated a full-vehicle vertical-dynamics model; designed an MPC controller that improved ISO 2631 ride comfort by >30%.
- Created a preview-based estimation and control strategy using front-axle measurements to anticipate rear-axle disturbances.
- Built and commissioned an HIL rig that unblocked validation of 2026–27 vehicle lines.
- Automated test-case execution and requirements tracking, reducing turnaround from hours to minutes; received the JLR Creator Award.

Competitions

RoboRacer (F1Tenth) Autonomous Racing | University of Pennsylvania
Placed 1st among 17 teams in head-to-head autonomous racing on a 1/10-scale Jetson + LiDAR + camera platform.

- Built a full autonomy stack in C++ &Python: SLAM, particle-filter localization, RRT planning, & MPC trajectory tracking.
- Deployed a vision-based friction-aware controller (MobileNetV3 + TensorRT) that delivered 17% faster laps and stayed stable where the baseline spun out.

Publications

1. Vidhu, N., Gupta, A., Salajeghe, R., Spangenberg, J., & Marla, D. (2024). A computational model for stereolithography apparatus (SLA) 3D printing. Progress in Additive Manufacturing, 9, 1605–1619. https://doi.org/10.1007/s40964-023-00525-5
2. Ghosh, S., & Vidhu, N. (2024). A new holistic approach for system-level development of seat features. SAE Technical Paper 2024-26-0381. https://doi.org/10.4271/2024-26-0381
3. Sureka, S., Rawat, G., Ghosh, S., & Vidhu, N. (2026). A novel approach to efficient system level validation of vehicle interior systems. SAE Technical Paper 2026-26-0534. https://doi.org/10.4271/2026-26-0534