Chinmay Murthy

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ECE student specializing in robotics and control systems, with experience in real-time state estimation, nonlinear control, and embedded systems. Proven leader in robotics projects, delivering optimized algorithms in industry and research.

Education

University of Washington — Seattle, WA

Bachelor of Science, Electrical and Computer Engineering (3.73) | Minor in Music — *Sep 2022 – Jun 2026*

- Relevant Coursework: Machine Learning, Computer Architecture, Embedded Systems, Signal Processing, Data Structures & Algorithms, Digital Design, Control Systems, Statics, Kinematics and Dynamics

Experience

Software Engineering Intern — June 2025 – Sep 2025

Bidgely — *Palo Alto, CA*

- Performed **supervised fine-tuning** of a large language model (**LLM**) on a curated **domain-specific dataset**
- Designed and implemented a **custom retrieval-augmented generation** (RAG) pipeline for proprietary data, reducing **response latency by 47%**

Undergraduate Research Assistant — Oct 2024 – May 2025

University of Washington — *Seattle, WA*

- Optimized **MSCKF** based VINS algorithm for **GPS-fused visual-inertial odometry** on outdoor ground robot

Geegah LLC — *Ithaca, NY*

Engineering Intern — June 2024 – Sep 2024

- Brought up and verified **RF circuitry** in next-gen (4x pixel density) ultrasonic imager with 200+ components
- Reengineered **FPGA** architecture for **25% lower resource use** and **100x performance gain**
- Created Python API for USB communication, enabling successful **customer demos** and **IEEE IUS** presentation

Applications Intern — June 2023 – Sep 2023

- Developed cost-efficient integration of proprietary imager technology with 3 axis motion control stage
- Demoed results at **DARPA ERI summit 2023 (1300+ participants)**
- Prototyped and troubleshot **fluidics, electronics and full stack web app** for water quality monitoring PoC
- Used Flask (Python) to create a **REST API** enabling fully remote operation

Clubs and Projects

Controls Software Lead — Sep 2022 – Present

Advanced Robotics at the University of Washington (ARUW) — *Seattle, WA*

- Designed and implemented **Cascade PID-LQG controller** of a **6DOF balancing two-wheel-legged robot** (5-bar active suspension). **Simulated in Matlab/Simulink** before STM32 deployment
- Developing a **Meta-Imitation Learning** pipeline distilling **RL and MPC** controllers into a **recurrent foundation policy** for **online system identification** and **zero-shot adaptation**
- Implemented **inverse kinematics** and gravity compensation for **8DOF differential manipulator**
- Designed **nonlinear sensor fusion** eliminating angular drift between 3 independent IMUs
- Managed **team of 10** to deliver and document the following under tight deadlines in a **75k+ LoC** codebase
  - A novel **autonomous path-following** algorithm operating at **3x previous speed**
  - Achieved **Kalman Filter** localization with **2-3 cm drift** over **100m travel**, fused with **fiducial markers**

Wallscapes | *Swift, ARKit* — Oct 2023

- Created an AR IOS app to project virtual art pieces onto public spaces

FTC Robotics Team 14504 Serenity Now! — May 2018 – May 2022

- Implemented **odometry**, pure pursuit, **spline-interpolated path planning**, **obstacle avoidance**, and computer vision using **OpenCV/TensorFlow** with **multithreaded Java architecture (7k+ LoC)**

Skills

Languages: C/C++, Python, Java, Verilog/SystemVerilog, Matlab, TypeScript
Developer Tools: Git, GoogleTest, ModelSim, Quartus, OpenCV, modm, Matlab/Simulink, React, Unix/Linux, ROS
Other: Arduino, Raspberry Pi, Finite Element Modeling, LaTeX, Fusion 360, CAN Bus, Oscilloscope/Logic Analyzer