

# Vidhatu Patel

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## EDUCATION

### University of Washington

Seattle, WA

*B.S. Electrical and Computer Engineering; Physics (Comprehensive)*

Sep 2026 – **Jun 2030**

- **Coursework:** CSE 123 Introduction to Computer Programming III, PHYS 122 Electromagnetism

### North Carolina School of Science and Mathematics

Durham, NC

*High School Diploma; Weighted GPA: 4.50/5.00*

Aug 2024 – Jun 2026

- **Coursework:** Linear Algebra (incl. Advanced Topics), Multivariable Calculus, Graph Theory, Mathematical Modeling

## EXPERIENCE

### Software Team Member

Oct 2026 – Present

*Husky Robotics, University of Washington*

Seattle, WA

- Contributing to software for UW's Mars rover, which competes in the University Rover Challenge

### STEPS4GROWTH Clean Energy Intern

Jun 2025 – Aug 2025

*CLEAN Labs, North Carolina A&T State University*

Greensboro, NC

- Built and deployed autonomous-vehicle software in ROS 2 Foxy on Linux using 2D LiDAR and stereo cameras
- Trained and optimized real-time detection and tracking models on an **NVIDIA Jetson Xavier NX**
- Developed LiDAR-camera sensor fusion pipelines to improve localization and obstacle detection

### Captain, Lead Programmer & Lead Fabrication

Jun 2022 – Jun 2026

*FIRST Robotics Competition, Teams 1533 & 900*

North Carolina

- Led autonomous-navigation software using YOLO detection and fiducial-marker localization; designed trigger-based command flow and tested logic in simulation to cut on-site debugging
- Advised the design team on 3-axis CNC manufacturability and built a CAD-to-part pipeline across subteams

## PROJECTS

### BigTrack: Multi-Camera 3D Object Tracking | Rust, C++, GTSAM, ONNX Runtime, WebGPU

2026

- Built a 3D tracker where any browser with a webcam joins as a camera, running YOLO detection on the GPU in real time
- Fused detections on an async Rust server with a C++ factor-graph optimizer that estimates camera poses and 3D paths
- Found that cross-device timing and noise modeling, not detection, limited accuracy, and designed fixes for both

### NeuroSense: On-Device Parkinson's Screening | PyTorch, Kotlin, Flutter

2025

- Built an Android app that screens for Parkinson's disease from a short voice recording, running a CNN entirely on the phone
- Used transfer learning and augmentation to train on only 81 recordings, evaluating recall rather than accuracy alone
- Rebuilt the audio pipeline in Kotlin when the iOS toolchain failed, and verified it against the Python training pipeline

### FRC Team 900 Competition Robot Software | Java, WPILib, AdvantageKit, PhotonVision

2026

- Wrote software for a swerve-drive robot with a turret shooter, structured so every match can be replayed from logs
- Fused AprilTag vision with odometry for localization; built turret auto-aim that compensates for latency and motion
- Set up a physics simulation of the robot and field so drive, vision, and autonomous code were tested before reaching hardware

## HONORS & AWARDS

### Congressional App Challenge Winner | NeuroSense; Rep. Virginia Foxx, North Carolina's 5th District

Jan 2026

### Intel AI Global Impact Festival, Global Award | SightLine: AI navigation glasses for the visually impaired

2025

### FRC Dean's List Semi-Finalist | FIRST North Carolina District, nominated for student leadership

Mar 2025

### FIRST North Carolina State Champion | Team 1533; winning alliance at the 40-team State Championship

Apr 2024

## TECHNICAL SKILLS

**Languages:** C++, Python, Java, Rust, Kotlin

**ML/AI:** PyTorch, TorchScript, ONNX Runtime, YOLO, OpenCV, GTSAM, transfer learning

**Systems & Tools:** Linux, ROS 2, NVIDIA Jetson Xavier NX, WebGPU, Docker, CMake, Git, WPILib, AdvantageKit, maple-sim

**Areas:** Computer Vision, Robotics, State Estimation, Sensor Fusion, On-Device ML, Embedded Systems