Tanish Dalal

734-465-7060 | tanishdalal14@gmail.com | tanishdalal.com | github.com/tanish200614 | linkedin.com/in/dalal-tanish

EDUCATION

University of Michigan — Ann Arbor, MI
B.S.E. in Computer Engineering — Aug. 2024 – May 2028
GPA: 4.00/4.00 Honors: University Honors; Dean's List
Relevant Coursework: Machine Learning, Data Structures & Algorithms, Computer Architecture, Embedded Systems, Discrete Mathematics, Linear Algebra, Logic Design

EXPERIENCE

Software Engineering Intern — May 2025 – Jul. 2025
ADNOC Distribution, EVCI & H2 Department — Abu Dhabi, UAE

- Developed a **React.js** analytics dashboard for EV-charging infrastructure metrics, reducing telemetry troubleshooting overhead by **25%** for a team of **30+** EV engineers.
- Built a **Python** ARIMA prototype model predicting temperature impact on charger uptime with **8% MAPE**; isolated charger overheating as the root cause of a long-standing charger uptime issue, saving **$15k** in lost revenue.
- Integrated and validated core telemetry APIs using automated **JavaScript** test suites, ensuring **100%** data consistency across live charger data streams.
- Authored a **25-page** EV-charger installation guide adopted by **35+** staff across **5** departments; evaluated vendors (Sinexcel, Teison) and proposed deployment strategies.

PROJECTS

Computer Vision Lead & Co-Founder — Michigan Robomasters — Aug. 2025 – Present
C++, Python, ROS 2, OpenCV, RViz, STM32

- Lead a computer vision subteam of **[Z] members** in building a YOLO/OpenCV-based armor-plate detection program, targeting **[X] FPS** inference with **[Y]% detection accuracy**.
- Implemented Kalman filtering for real-time target prediction and lead compensation, reducing target tracking error by **[X]%** during autonomous aiming tests.
- Developed embedded motor-control firmware in C/C++ for STM32 microcontrollers, implementing M3508 drive motors and GM6020 gimbal controls over CAN bus and UART for multi-axis chassis control.
- Implemented PID control algorithms for motor velocity and position regulation, achieving **[X]% steady-state accuracy** and **[Y] ms response time** in closed-loop motor testing.

Algorithm Practice Platform — Sep. 2025 – Present
React, FastAPI, Python, JavaScript, SQLite

- Built a real-time multiplayer algorithm battle platform using **FastAPI** and **WebSockets**, supporting **50+ concurrent matches** with **<150ms median latency** for **200+** students.
- Engineered a secure code execution engine supporting **3 languages**, integrating a **C++ assembly viewer** (*-O0* vs. *-O2*), **log-log regression** Big-O analysis, and **TF-IDF + k-means** algorithmic approach classification.
- Implemented ELO-seeded matchmaking, **8-player** tournament brackets with **<2s** queues, and live post-match rating updates via **SQLite**.
- Built an AI problem and interview generator for automated coding assessments, achieving a **96% validation success rate** with **<1.2s** response times.

Robotic Arm Controls Developer — Michigan Mars Rover — Aug. 2024 – Present
C++, Python, ROS 2, RViz, Eigen, NumPy

- Engineered a closed-loop Cartesian IK controller for a **5-DOF** robotic arm, improving target alignment accuracy by **20%** using proportional velocity control and shortest-path end-effector tracking.
- Developed geometric IK solvers integrated into a **30 Hz ROS 2** velocity pipeline with joint-limit checks, achieving **<1 cm** convergence and reducing motor saturation by **30%**.
- Built a Python workspace point-cloud visualizer sampling reachability at **5 cm** resolution with dexterity scoring and draggable RViz obstacles, cutting manual validation time by **50%**.

TECHNICAL SKILLS

Languages: C/C++ (OOP), Python, Java, JavaScript, Assembly, MATLAB, HTML5/CSS3
Frameworks: React, FastAPI, ROS 2
Libraries: pandas, NumPy, Matplotlib, SciPy
Developer Tools: Git, GitHub Actions (CI/CD), Google Cloud Platform, LaTeX
Testing & Simulation: ModelSim, Pytest, RViz, ABB RobotStudio
Hardware/Embedded: STM32, Arduino, Verilog, Raspberry Pi