

Malek Swilam

(703) 832-1915 | malekgswilam@gmail.com | malekswilam.dev | linkedin.com/in/malek-swilam | github.com/malekTheCoder

EDUCATION

George Mason University, Honors College

B.S. Computer Engineering

Fairfax, VA

Aug. 2026 – May 2030 (Expected)

Oakton High School

Advanced Studies Diploma | SAT: 1510 (Math 780, EBRW 730)

Vienna, VA

Aug. 2022 – Jun. 2026

- **Relevant Coursework:** Advanced Data Structures & Algorithms, AP Computer Science A, AP Calculus BC, AP Physics C: Electricity & Magnetism, AP Statistics, AP Physics C: Mechanics (exam only), AP Physics 1

EXPERIENCE

Machine Learning Intern

Yanez Compliance

Jun. 2026 – Present

Remote

- Built a face anti-spoofing ensemble combining a gradient-boosted model on **50+** engineered image cues with a CNN-based depth-predicting model, cutting error **75%** versus the deployed rule-based system on unseen data
- Designed a rank-based score fusion for models with incomparable output scales, adding **3.4 AUC points** over the stronger component and catching **100%** of real attacks that had bypassed the production system
- Automated an adversarial document tampering pipeline, increasing throughput **500%+** via multi-threading and a load-aware scheduler, and replacing general-purpose generative models with a dedicated face-swap model at **85–93% lower cost** per image

Engineering Intern

Alarm.com

May 2026

Tysons Corner, VA

- Performed hands-on hardware lab work soldering buck converters and embedded boards, and provisioned Raspberry Pi units to build out physical test automation infrastructure for the hardware QA team
- Configured and integrated home security devices (locks, sensors, cameras, thermostats, Flex I/O) into automated testing workflows
- Built an internal Python tool for lab device management

Machine Learning Research Intern

George Mason University, ASSIP

Jun. – Sep. 2025

Fairfax, VA (Hybrid)

- Built a full ML pipeline for short-term rainfall forecasting, implementing and comparing LSTM, XGBoost, and ensemble models evaluated via MAE, RMSE, and R^2
- Improved prediction accuracy **12–15%** over individual models by combining LSTM and XGBoost into an ensemble, achieving **96%+** of predictions within $\pm 1\text{mm}$ of actual; published in *GMU Journal of Student-Scientists' Research*

Programming Lead

FTC Robotics, Team 369 (Oakton)

2023 – 2026

Vienna, VA

- Led all robot software development in Java across two varsity seasons; built an autonomous localization pipeline fusing wheel odometry with IMU, with AprilTag detection for field-relative pose correction and Road Runner motion profiling
- Designed multi-subsystem PIDF control (turret, flywheel, pose stabilization) and a Limelight-based vision targeting system; qualified for **State Championship** both seasons and **World Championship** one season

PROJECTS

OCRadar: Oral Cancer Detection App | Python, Azure AI Vision, Flutter, Dart

ocradar.com

- Co-built a cross-platform iOS/Android/web app screening for early signs of oral cancer via Azure AI Custom Vision trained on thousands of labeled clinical images, reaching **98% accuracy**; joined as COO and lead developer for Android/Windows; featured by WTOP News and international outlets

Voice-Controlled Robotics Agent | Python, MuJoCo, Anthropic API, FastAPI, Whisper malekswilam.dev/robot-agent

- Built a voice-controlled robotic manipulation agent in MuJoCo where an LLM decomposes natural-language commands into sub-goals via chain-of-thought reasoning, detects mid-task failures, and replans autonomously
- Solved robot motion via inverse kinematics with the mink library; streamed the live simulation through a FastAPI WebSocket portal

Desk Calendar Agent | Python, Raspberry Pi 5, Local LLM, Google Calendar API

malekswilam.dev/calendar-agent

- Built an agent that turns a texted or spoken instruction (e.g. “lunch with John Appleseed on Friday at noon”) into a Google Calendar event using a 4-bit quantized 3B-parameter model (Qwen2.5) running fully on-device on a Raspberry Pi 5, with deterministic checks to block destructive actions
- Wired the e-ink display to the Raspberry Pi 5, wrote the rendering and display-refresh layer, and selected the hardware components for the build

TECHNICAL SKILLS

Languages: Java, Python, Dart, JavaScript, HTML/CSS

Technologies: PyTorch, XGBoost, NumPy, FastAPI, Flutter, MuJoCo, Azure AI Vision, Anthropic API, Ollama

Hardware: Soldering, Embedded Linux, Raspberry Pi, Sensor Fusion & PIDF Control

Tools: Git/GitHub, Claude Code, Codex, IntelliJ

Honors: Eagle Scout; FTC World Championship Qualifier (8th Divisional Captain); T.R. Cook Award of Excellence in Technology (2025)