

AHTESHAM ALVI

📞 (267) 264-1226 ✉ ahtesham.alvi20@gmail.com 📍 19030, Fairless Hills 📅 11/24/2004

🌐 github.com/AhteshamAlvi 🌐 www.linkedin.com/in/ahtesham-alvi

Profile

Multi-faceted Software Development Intern with a strong foundation in computer science and finance, skilled in developing innovative solutions using Python, NLP, and agile methodologies. Proven track record in enhancing user engagement and software performance, complemented by diverse experience in budget management, marketing, and educational mentoring. Effective communicator and collaborative team player, committed to delivering excellence and fostering growth in professional environments.

Work experience

Software Development Intern

July 2025 - November 2025

Urban Food Alliance, Remote

- Collaborated with a cross-functional team to develop a Financial Literacy Chatbot using Python and NLP, aimed at improving accessibility to financial advice and management for underserved communities, increasing user engagement by 20%.
- Integrated NLP tools to improve the chatbot's ability to understand and respond to user queries, and refined dialogue by 30%.
- Applied Scrum and utilized Git/GitHub in development, testing, and analysis, leading to a 95% decrease in post-release issues.
- Developed and optimised software features for a mobile application.
- Assisted in debugging code to improve application performance and reliability.
- Collaborated with team members in agile development and scrum planning sessions.

Office Assistant

January 2024 - Current

College of Mathematics, Computer, and Natural Science, College Park

- Managed, scanned, and archived over 4000 documents, refining file organization by 70% and improving retrieval efficiency.
- Audited and entered financial data, including W4 forms, into Workday and Excel, ensuring compliance with IRS regulations.
- Maintained organised filing system for easy retrieval of documents.
- Handled correspondence and communications with clients and vendors.
- Assisted with the preparation of reports and presentations as needed.

Budget Reviewer

September 2024 - Current

UMD Finance Committee, College Park

- Reviewed and approved budget requests from 200+ campus organizations, managing resources and ensuring efficient allocation.
- Administered a \$2.7 million dollar annual budget, organizing expenditures and ensuring financial stability for student leadership.
- Analysed departmental budgets to ensure financial compliance regularly.
- Collaborated with teams to refine budget proposals and forecasts effectively.
- Reviewed and voted on crucial financial legislation for university student body government and funds management initiatives.

Marketing Manager | General Assistant

June 2017 - Current

AI Construction LLC, Fairless Hills

- Remodeled multiple residential kitchens, bathrooms, and additions, including cabinet installation, electrical work, appliance integration, plumbing, and drywall & flooring, delivering projects on time and within budget.
- Designed and developed website layouts and marketing materials for company vehicles using Adobe Photoshop.
- Conducted market research to identify emerging trends and opportunities.
- Analysed performance metrics to optimise marketing initiatives' effectiveness.
- Managed direct communication with Marketing specialists to effectively build marketing strategy and SEO.

Code Sensei

June 2022 - December 2022

Code Ninjas , Yardley

- Taught JavaScript to 30+ children, utilizing projects & coding tasks, resulting in 25% improvement in student comprehension.
- Mentored students in developing their own projects, such as coding games, robotic blocks, and beginner coding activities.
- Mentored junior developers in coding best practices and techniques.
- Reviewed and provided feedback on code to ensure quality and efficiency.
- Developed learning materials for programming languages and frameworks.

Education

Bachelor of Science in Computer Science, Finance

September 2023 - Current

University of Maryland, College Park

Minors in Data Science and Robotics and Autonomous Systems

High School Diploma

September 2019 - June 2023

Pennsbury High School, Fairless Hills

Skills

Ros2 (Humble) & Gazebo • Java • C/C++ • Rust • Linux • Qiskit • OCaml • MCP
• Python (PyTorch, SciKit Learn) • React • Javascript • OpenAI API • SQL • Data Analysis • ML Engineering
• Scrum • Git/Github • Azure • Microsoft Office • Excel • Tableau • Communication Skills
• Team Collaboration • Mentorship

Certifications

Google Data Analytics Certification (To be completed March 2026) • PSM I & II (To be completed March 2026)

Projects

Exoplanet Habitability Classification ML Model

January 2026 - Current

<https://github.com/AhteshamAlvi/Exoplanet-Habitability-Classification-ML-Model.git>

- Developing neural and embedding-based ML models to predict exoplanet habitability using NASA and JPL datasets.
- Engineering feature encodings of parameters and training custom neural networks for similarity-based classification.
- Identifying candidate habitable exoplanets by projecting NASA catalog entries into a learned habitability space.

Quantum Computing Implementation Projects

January 2026 - Current

https://github.com/AhteshamAlvi/Quantum_Projects.git

- Designed and simulated quantum circuits in Qiskit implementing Grover search and Shor factoring workflows, including oracle construction and modular exponentiation.
- Implemented parameterized quantum circuits for Quantum ML classification experiments using Qiskit simulators and IBM Quantum hardware.

Robotic Arm Manipulator Control

August 2025 - December 2026

Intro to Robotics Project

<https://github.com/AhteshamAlvi/Robotics-Arm-Manipulator-Control.git>

- Developed an end-to-end ROS2 robotic manipulation pipeline integrating ArUco vision, perspective calibration, inverse kinematics, and autonomous pick-and-place.
- Homography-based pixel-to-world coordinate transformation to map camera detections to robot table-frame positions.
- Built inverse kinematics and motion sequencing modules enabling autonomous block sorting and height-aware stacking.
- Integrated vacuum gripper control and ROS messaging for synchronized grasping and arm trajectory execution.
- Validated system in physical experiments demonstrating reliable block detection, relocation, and stacking.

Education Inequality Machine Learning Project

December 2025 - December 2025

https://github.com/AhteshamAlvi/Education_Inequality_MLproject.git

- Analyzed a 400-student socioeconomic and academic dataset using statistical tests (chi-square, ANOVA, Spearman) and visualization to study predictors of college GPA.
- Developed Python ML pipeline (pandas, scikit-learn) training Linear Regression and Random Forest models to predict GPA.
- Built structured preprocessing workflow with Pipeline for reproducible feature handling and model comparison.
- Generated interpretive visualizations and published interactive project page documenting methodology and findings.

Mini C Compiler

May 2025 - May 2025

https://github.com/AhteshamAlvi/mini_C_compiler.git

- Implemented multi-pass compiler analysis in OCaml including constant folding/propagation, algebraic simplification, and dead-branch elimination over an AST.
- Built static type checker enforcing operator and control-flow typing rules with environment merging across branches.
- Hindley–Milner–style type inference with constraint generation, unification, and substitution to infer variable types.
- Developed type-directed AST rewriting to apply inferred types and optimization results back into program representation.
- Added compile-time error detection for undeclared variables, invalid operations, and divide-by-zero conditions.

AST-Based Unix Shell

December 2024 - December 2024

https://github.com/AhteshamAlvi/Mini_Unix_Shell.git

- Implemented a Unix-style shell in C using a lexer + recursive-descent parser to build an AST with correct operator precedence for |, &&/|, ;, and subshell parentheses.
- Built an AST-based execution engine supporting pipes, sequencing, logical short-circuit evaluation, subshells, and exit-status propagation using fork(), execvp(), waitpid(), and process control.
- Implemented I/O redirection (<, >) via open() and dup2() with robust syscall error handling and validation.
- Added built-ins (cd, exit) executed in the parent process to preserve shell state, mirroring real shell behavior.

Bioinspired Robotics Research Internship – Flapping Winged Glider

May 2024 - July 2024

College Park

https://github.com/AhteshamAlvi/Flapping_Winged_Glider.git

- Led development of a bio-inspired articulated flapping-wing robotic glider (RoboRaptor) integrating servo actuation, lightweight aeroelastic airframe, onboard sensing, and telemetry for wind–flight interaction research.
- Engineered Arduino Nano firmware unifying flapping control, torque modulation, remote receiver interfacing, sensor acquisition, and ~30 Hz OpenLog SD-card telemetry logging.
- Designed and iterated carbon-fiber wing spars and 3D-printed servo mounts to withstand cyclic flapping loads, vibration, and torque stresses in lightweight robotic structures.
- Built wind and inertial sensing pipeline to record environmental and flight dynamics data for analysis of aeroelastic behavior and wind-assisted gliding performance.
- Conducted wind-dependent flight experiments validating stable tethered gliding, servo-driven flapping, and directional control across multiple prototype iterations.