Jeffrey Oduman

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EDUCATION

University of Pennsylvania, Philadelphia, PA | Computer Science BSE + Robotics Masters | AI concentration **Expected May 2028**

- **GPA:** 3.91 / 4.00
- **Coursework***:* Discrete Mathematics, Programming Languages and Techniques, Multivariable Calculus, Social Networks, Probability, Algorithms and Data Structures, Automata, Complexity, Computability, Big Data Analytics, Linear Algebra

African Leadership Academy, Johannesburg, South Africa | High School Diploma + Cambridge A Level **Sep 2022 - Jun 2024**

- Best in South Africa – A Level Mathematics (97%) & Computer Science (96%), Uganda National High School Chess Gold Medal
- Hack Club President, Science & Robotics President, Chess President, Student Government Academic Representative, House Captain

SKILLS

Languages: Python, Kotlin, Java, C++, OCaml, SQL, HTML, CSS, JavaScript

Libraries and Frameworks: Java Swing, Node.js, React.js, Pandas, Polars, Scikit-learn, Scikit-optimize, PyTorch, Matplotlib, Plotly, PySerial, Alpaca-Py, JSoup, Jetpack Compose, Robotics-Toolbox, Spatial-Math

Protocols: CAN, UART, I2C, SSH,

Tools: Visual Studio Code, Android Studio, IntelliJ, Canva, Git, Tableau, Room, Docker, Confluence, Windows Subsystem for Linux (WSL), Ubuntu, Raspberry Pi 4 (RP4), Arduino, Firebase

Machine Learning Models: Bert, Finbert, Faster-whisper, Random Forest, Logistic Regression, Multiple Linear Regression, Gradient Boost

PROJECTS

Quantum Trading: a trading terminal built to autonomously take advantage of market opportunities **Python, JavaScript**

- Executes trades via Alpaca Trading API, complete with back-testing library and informative dashboards for monitoring and control

Transparency Now: an Android prototype to democratize and audit public government data and welcome whistle blowers **Kotlin, Firebase**

- 3rd place at school-wide E-fest pitch competition. Qualified for the Africa-wide ALX Start-up Incubator

Chess**:** an app to play Player-Versus-Player chess **Java, Swing**

- Implemented complex game logic from scratch, followed MVVM architecture principles for modularity

NBA Predictor (group project): machine learning models to predict NBA game outcomes **Python, Pandas, Numpy, Scikit-learn**

- Led data prep, model training & hyperparameter tuning for the Logistic Regression (84.7% accuracy, 0.93 AUC). Also led EDA

Wiki Olympics: a Wikipedia scraper for querying data about the Olympics **Java, JSoup, Regex**

- Programmatically fetched and parsed Wikipedia pages to extract structured data, using a single page as the entry point for traversal

RELEVANT EXPERIENCE

JoyNet Project - SafeLab **Jan 2025 - Present**

Full-stack Web Developer| Undergraduate Researcher | Philadelphia | joynet-99b18.web.app

- Trained and deployed a sentiment analysis machine learning model using BERT and Faster-whisper to categorize videos by sentiment
- Created an automated infinite-scroll social media feed pipeline to stream content from Instagram, TikTok, and Threads simultaneously
- Implemented a social network with sharing and messaging features using Firebase API, allowing users to connect with each other
- Automated daily social media scraping using EnsembleData API to create a pipeline of content created by and for people of color

Penn Electric Racing **Sep 2024 - Present**

Electrical Software Engineer | Vehicle systems | Philadelphia

- Co-created PERDA, the team's first custom data visualization library, leveraging matplotlib, and NumPy for a custom data format
- Designed C++ code to integrate pitot tube air pressure sensors onto the aero rakes, offering actionable insights into aerodynamics
- Implemented tapered charging using PySerial to programmatically control a precision power supply for safe battery charging
- Debugged and fixed an existing I2C protocol library for communication between I2C sensors and the microcontroller

Sung Robotics Group **Apr 2025 - Present**

Undergraduate Researcher | Research award recipient | Compliant Origami Robots | Philadelphia

- Developed a modular 3D CSC Dubins path class in python using RoboticsToolbox, supporting arbitrary Curve and Straight sequences, complete with visual debugging tools to render full 3D paths, pose frames, constraint bounds, and goal-axis alignment using Matplotlib
- Collaborated with a PhD researcher to extend 3D CSC Dubins Path theory, formulating paths as robotic arms with 6-DOF and 10-ETS
- Developed a gradient descent-based inverse kinematics solver to solve the shortest Dubin's Path problem in 3D while keeping the end effector along a desired axis of motion, allowing rotational and translational freedom about the same axis, and minimizing path length

CIS 1200 (Programming Languages and Techniques) **Jan 2025 - Present**

Teaching Assistant | Debugging | Teaching | Philadelphia

- Resolved weekly homework issues raised in previous iterations to make homework instructions and code more robust
- Guided students in the process of debugging OCaml and Java program code
- Led weekly recitations, held office hours, graded assignments, and provided feedback to support student learning

Google Africa Developer Scholarship **Jun 2022 – May 2023**

Associate Android Development Trainee | Full stack Android development | Remote

- Built 6 apps using Kotlin and Java, showcasing functionalities like database integration (SQLite/Room) and networking (REST API)
- Implemented adaptive UI design, accessibility compliance, and backend integration with Firebase
- Mastered concepts including lifecycle management, MVVM architecture, and material design principles