Jeffery Wei

301-366-9122 | jefferywei05@gmail.com | linkedin.com/in/jefferywei | github.com/jefferyywei | jefferywei.com

Education

University of Maryland, College Park — College Park, MD
B.S. in Computer Science and Applied Mathematics — *Expected Graduation Dec 2026*

- Awards: President's Scholarship
- Coursework: Algorithms, Data Structures, Computer Systems, Organization of Programming Languages, Object-Oriented Programming, Machine Learning, Probability Theory, Linear Algebra

Experience

Machine Learning Research Fellow — Jun 2025 – Present
The Tensor Lab for Computational Medicine — *Remote*

- Lead research on prostate cancer gene variants, predicting impacts and revealing risks using Python, scikit-learn, and pandas.
- Integrate Google AlphaGenome, a novel deep-learning model, to predict 1,000+ molecular effects across 3,000+ variants.
- Construct feature engineering pipelines to transform high-dimensional outputs into interpretable Regulatory Impact Scores, capturing key functional outcomes for downstream analysis, achieving 90% dimensionality reduction.
- Cluster variants using k-means and hierarchical clustering, uncovering risk mechanisms and visualizing with Matplotlib.

Software Engineer Intern — Jun 2024 – May 2025
NASA Goddard Space Flight Center — *Greenbelt, MD*

- Analyzed satellite data compression methods (zstd, zlib, gzip, Blosc) to reduce storage, projected to save $150M in costs.
- Validated compressed outputs with scientists, preserving over 99% of key forecast variables to maintain scientific integrity.
- Upgraded a legacy Perl/PHP forecast visualization system to a modern JavaScript-based platform, integrating two new model components and reducing load times by 35%.

Software Engineer — Jan 2025 – Mar 2025
Microsoft Hack4Good — *Bellevue, WA*

- Collaborated on a multi-agent conversational system enabling LLM agents to work together, execute tasks, and transfer conversations across context-aware chatrooms, designed to help people with disabilities explore tailored job opportunities.
- Implemented retrieval-augmented prompts with Semantic Kernel and Pinecone, injecting context for grounded responses.
- Integrated WebSockets into the React frontend to stream real-time agent interactions and synchronize context transfers.

Technical Lead — Feb 2024 – Jan 2025
Hack4Impact-UMD — *College Park, MD*

- Developed a React Native app for a family literacy nonprofit, enabling 80k+ families to track children's reading progress.
- Integrated Firebase Authentication for secure, role-based login and Firestore for real-time storage/retrieval of assignments.
- Led a 6-person engineering team in Agile, guiding technical decisions, system architecture, sprint planning, and code reviews.

Research Assistant — Oct 2021 – Sep 2024
Maryland Information Network Dynamics Lab — *College Park, MD*

- Evaluated ML models (SVM, Random Forest, LSTM) to predict respiratory illness onset from patient breath signal data.
- Engineered preprocessing pipeline to reduce noise in raw respiratory signals by 80%, improving prediction model accuracy.
- Optimized lab website performance with GatsbyJS, cutting load times by 30% through GraphQL-powered static rendering.

Projects

StreamSync | *React, TypeScript, Node.js, WebSockets, PostgreSQL, Docker*

- Built a real-time dashboard in React with WebSocket streaming to visualize finance, IoT, weather, system, and custom data.
- Implemented PostgreSQL persistence with REST APIs for historical data storage, and added threshold-based email alerts.
- Containerized the stack with Docker Compose and added custom API integration for live monitoring from external sources.

SnapChef | *Python, YOLOv8, OpenCV, Flask, JavaScript*

- Developed a full-stack computer vision app to detect ingredients and suggest recipes from live video input.
- Trained a YOLOv8 model and integrated it with OpenCV for accurate object detection across 20+ common food items.
- Built a JavaScript frontend for live video streaming with a Flask backend to process image uploads and serve REST APIs.

Technical Skills

Languages: Python, Java, JavaScript, TypeScript, C, SQL, Rust, OCaml, Assembly (x86-64), HTML, CSS
Frameworks & Libraries: React, Next.js, React Native, Node.js, Express, Flask, PyTorch, scikit-learn, NumPy, pandas, Matplotlib, OpenCV
Developer Tools & Platforms: Git, Docker, PostgreSQL, Firebase, REST APIs, GraphQL, WebSockets, Figma