Jeffery Wei

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EDUCATION

University Of Maryland, College Park | College Park, MD Expected Graduation Dec 2026

Bachelor of Science

Majors: Computer Science (Machine Learning Specialization) and Applied Mathematics

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

SKILLS

- **Programming Languages**: Python, Java, C, JavaScript, Typescript, Rust, OCaml, Assembly (x86-64), HTML, CSS
- **Frameworks/Libraries**: React, Next.js, Node.js, Flask, React Native, Firebase, scikit-learn, PyTorch, OpenCV, REST APIs
- **Tools & Platforms:** Git, Visual Studio Code, PyCharm, JupyterLab, Eclipse, Figma, MATLAB

EXPERIENCE

Machine Learning Research Fellow | The Tensor Lab for Computational Medicine *Jun 2025 - Present*

- Lead ML research on prostate cancer genetic variants to predict regulatory impacts and reveal inherited risk mechanisms.
- Integrate AlphaGenome, a novel deep-learning model, to predict thousands of molecular effects per variant.
- Construct feature engineering pipelines to transform high-dimensional AlphaGenome outputs into interpretable Regulatory Impact Scores, capturing key functional outcomes for downstream analysis.
- Cluster variants by functional profiles using unsupervised learning to uncover convergent risk mechanisms across loci.

Software Engineer Intern | NASA Goddard Space Flight Center *Jun 2024 - May 2025*

- Analyzed data compression techniques to reduce satellite data size, potentially saving $150 million in cloud storage costs.
- Validated compressed outputs with scientists, preserving over 99% of key forecast variables to maintain scientific integrity.
- Upgrade a legacy forecast visualization system, integrating two new model components and reducing load time by 35%.

Software Engineer | Microsoft Hack4Good *Jan 2025 - Mar 2025*

- Selected as 1 of 20 UMD students for Microsoft hackathon to co-develop nonprofit software alongside Microsoft engineers.
- Collaborated on a multi-agent conversational system enabling LLM agents to collaborate, execute tasks, and transfer conversations across context-aware chatrooms, designed to help people with disabilities explore tailored job opportunities.
- Built retrieval-augmented prompts with Semantic Kernel and Pinecone to inject context into queries for grounded replies.

Technical Lead | Hack4Impact-UMD *Feb 2024 - Jan 2025*

- Developed a React Native app for a family literacy nonprofit, enabling 80K+ families to track child reading progress.
- Integrated Firebase Authentication for secure, role-based login and Firestore to store and retrieve reading assignments.
- Directed a six-person engineering team, overseeing technical decisions, system architecture, and sprint planning.

Research Assistant | Maryland Information Network Dynamics Lab *Oct 2021 - Sep 2024*

- 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 Gatsby, cutting load times by 30% through GraphQL-powered static rendering.

PROJECTS

SnapChef | jwei.pythonanywhere.com | *Python, Flask, Javascript, OpenCV*

- Developed a web app that utilizes computer vision to classify ingredients and suggest recipes from real-time camera input.
- Trained and integrated a custom model using OpenCV and YOLOv8 for robust ingredient detection.
- Implemented a frontend with video streaming functionalities using JavaScript and developed a backend server using Flask to asynchronously handle incoming HTTP requests, image uploads, and provide RESTful API endpoints for processing.

Portfolio Website | jefferywei.com | *React, Javascript, SCSS*

- Designed and developed a personal portfolio website to showcase professional projects, skills, and achievements.
- Implemented responsive layout using SCSS Media Queries to ensure seamless UX across screen sizes.