

Tai Williams

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Education

University of Central Florida, Burnett Honors College
Bachelor of Science in Computer Engineering

Orlando, FL

August 2024 { May 2028

Experience

Undergraduate Learning Assistant

August 2025 – Present

University of Central Florida

Orlando, FL

- Leading 5+ weekly C programming help sessions and open office hours for 150+ students, diagnosing common pitfalls, fostering peer collaboration, and elevating assignment completion rates.
- Developing comprehensive C programming study guides with targeted challenges on data structures, pointers, and recursion, streamlining exam preparation and minimizing recurring errors.
- Conducting focused code-review workshops on efficiency, consistent styling, live debugging, and inline documentation, reaching 70% of target students and instilling lasting best practices.

Software Engineering Associate

June 2025 – Present

Kinkofa

Dallas, TX

- Deploying and maintaining code for a media-heavy archival web app using **Next.js**, **Node.js**, and **React**, serving 500+ users with authentication and authorization through a CI/CD pipeline via **Vercel** and **Github**.
- Eliminated 90% of redundant API calls by implementing a data provider caching strategy using **TypeScript** wrapper components across layout files.
- Reduced monthly hosting and bandwidth costs by approximately 70% by improving an **AWS S3** media streaming pipeline by routing through a **Cloudflare** Worker and utilizing signed URLs instead of natively routing through **Vercel**.
- Instrumented 25+ custom user events across PostHog, Customer.io, and Google Analytics to provide the product team with data-driven UX insights and faster QA troubleshooting.

Projects

SightSpeech | Python, Flask, React, Next.js, JavaScript, Gemini API, OpenCV

September 2025

- Architected and delivered a full-stack assistive application for individuals with visual impairments using **Next.js/React** and **Flask** within a 36-hour hackathon sprint.
- Engineered a real-time text-to-speech pipeline by scraping and parsing live video streams using **OpenCV** and **Gemini API**, enabling intuitive gesture- and voice-controlled accessibility features.
- Won **Best Use of Gemini API Award** from Major League Hacking, outperforming 110+ teams with an innovative AI-driven integration for language processing.

ASL Neural Network App | Python, FastAPI, Jupyter Notebook, TensorFlow, OpenCV

July 2025 – Present

- Engineering a neural network capable of recognizing 25+ ASL signs with more than 90% accuracy by leveraging MediaPipe for preprocessing and a custom **OpenCV + TensorFlow** pipeline for categorization.
- Integrating a live inference model into a **Python** full-stack app to convert gestures into text-to-speech, with projected reliability/confidence above 85% and real-time troubleshooting metrics.
- Accelerated **OpenCV** data collection by 30% via the creation a command line tool to streamline and automate capturing of 2500+ images per category.

EM Particle Simulator | C++, SDL2, CMake

June 2025 – July 2025

- Engineered a high-performance custom 3D renderer in **C++/SDL2**, enabling dynamic mesh visualization under real-time physical forces.
- Facilitated accurate real-time computations for 100+ simultaneous meshes by strengthening simulation stability and precision by integrating a fourth-order Runge Kutta solver.
- Cut draw calls by 75% and boosted FPS by 50% through the use of backface culling, Z-buffer-based precomputed visibility, and merge-sort batching to streamline render pipeline.

Technical Skills

Languages: Python, C++, TypeScript, C, Verilog, JavaScript, Java, MATLAB, SQL, C#, HTML, CSS

Frameworks: React, Node.js, Next.js, Flask, Django, FastAPI, TailwindCSS, Bootstrap

Developer Tools: Git, Amazon Web Services, Cloudflare, VS Code, Supabase, Excel, Vercel, Jupyter Notebook, CMake

Libraries: TensorFlow, OpenCV, SDL2, NumPy, Matplotlib, Pandas