

Justin Rosales

269-341-0653 | justin06.rosales@gmail.com | justinr.dev | linkedin.com/in/justin-rosales | github.com/justinr25

EDUCATION

University of Michigan

BSE Computer Science, Minor Mathematics

Ann Arbor, MI

Expected May 2029

- **GPA:** 3.8/4.0
- **Coursework:** Data Structures and Algorithms, Computer Organization, OOP and Intro Data Structures

EXPERIENCE

Student Software Developer

May 2026 – Present

University of Michigan School of Nursing

Ann Arbor, MI

- Engineered a dynamic 11-step clinical assessment and diagnostic HADS screening tool in React Native, using state-driven branching logic for instant patient anxiety scoring and clinical severity feedback
- Designed resilient client-side state management using Redux Toolkit slices and async dispatchers, achieving zero runtime crashes in offline hospital environments with automated mock fallbacks
- Integrated assessment outcomes into a dynamic journey tracking and resource recommendation engine via RESTful MongoDB endpoints, automating milestone logging and filtering clinical articles tailored to user state

Research Assistant

May 2026 – Present

University of Michigan – Civil & Environmental Engineering Department

Ann Arbor, MI

- Architected the migration of monolithic Jupyter Notebooks into modular, production-grade Python pipelines for aerosol mass spectrometry (AMS) analysis, eliminating codebase redundancy across CLI and GUI interfaces
- Engineered a responsive desktop GUI application in CustomTkinter with embedded interactive Matplotlib canvases for real-time functional group deconvolution, reducing analytical visualization workflow time by 80%
- Developed automated batch-processing data pipelines with error handling to sequentially analyze multi-file atmospheric chemistry datasets, scaling throughput to generate 100+ publication-quality radial plots in seconds

PROJECTS

Arithmetic Battle | [GitHub](#) | *React, TypeScript, Tailwind CSS, Firebase*

2026

- Developed a real-time multiplayer mental math duel game with head-to-head matchmaking, enabling zero-friction player entry via Firebase Anonymous Auth and instant room creation with 6-character codes
- Synchronized live opponent scoring and game states with low latency via Firebase Firestore real-time document listeners, while implementing a multiplayer rematch voting system with immediate transactional state resets
- Ensured fair gameplay with identical mathematical problem sequences and arithmetic difficulty across both client instances by implementing a deterministic seeded pseudo-random number generation algorithm (Mulberry32)

Flappy Bird AI | [GitHub](#) | *Python, Pygame, NEAT-Python, NumPy, Matplotlib*

2025

- Developed a neuroevolution-based Flappy Bird simulation in Python using Object-Oriented Programming principles, implementing modular classes for game entities with encapsulated state and behavior
- Integrated the NEAT-Python library to evolve feedforward neural networks via a custom fitness function, surpassing human-level consistency within 10 generations across 50 simultaneous agents
- Engineered a real-time game loop with Pygame, processing neural network outputs to autonomously control agent actions based on 4 spatial inputs (player position, horizontal distance, top/bottom gap distances)

Splitr | *MHacks 2025 Winner – Best Use of Auth0* | [GitHub](#) | *Flask, Auth0, TensorFlow.js, Tailwind CSS*

2025

- Re-engineered machine learning pipeline to 100% client-side TensorFlow.js (face-api.js) for 30+ FPS WebGL tracking, and refactored Flask backend into a modular App Factory with Authlib Auth0
- Redesigned frontend interface using a modern Tailwind CSS v4 design system, implementing responsive dark-mode aesthetics, fluid layout transitions, and dynamic micro-animations to enhance user experience
- Led a 4-person engineering team to design, build, and deploy the functional web prototype within a 24-hour hackathon time limit, winning 1st Place for “Best Use of Auth0” at MHacks 2025

TECHNICAL SKILLS

Languages: Python, TypeScript, JavaScript, C/C++, HTML, CSS

Frameworks/Libraries: React, Tailwind CSS, NumPy, pandas

Backend/Databases: Node.js, Express, Firebase, MongoDB

Tools/Other: Git, Vercel, Neovim, VS Code