

Luke Cullen

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EDUCATION

University of Central Florida

B.S. Computer Science - Data Science Minor - 3.58 GPA

Orlando, FL

May 2027

EXPERIENCE

Techranger

October 2025 - Present

UCF Center for Distributed Learning

Orlando, FL

- Contributed to major updates for our **gamified learning platform**, Materia, making sweeping **responsive design** changes in **React**, and **upgrading developer tools** to support a full Python rewrite.
- Took over development of a new dashboard for **user-generated content** in Materia, focusing on **interaction design**, UI/UX implementation, and detailed **meta-data searching**.
- Working with various **faculty members and designers** to fully **rewrite** multiple Materia activities in **JavaScript**, improving **student accessibility** and adding **pedagogical value**.
- Deployed a major update to an **LTI tool** for quiz accessibility requests on **AWS EC2** servers, writing new **Docker** configurations and upgrading it to support the newer, more secure **LTI 1.3** standard.

Senior Hackathon Organizer, Developer

July 2025 - May 2026

Knight Hacks

Orlando, FL

- Authored **attendance tracking systems** and an accompanying management interface in **React** and **Node.js**, storing valuable metrics for **60** workshop/sponsor events and **6,400+** check-in instances throughout the weekend while implementing **rapid hot-fixes**.
- Organized the **Knight Hacks VIII** hackathon with **90% positive ratings**, as well as developing for our hacker management infrastructure, **Blade**, which achieved a peak of about **850** concurrent users during the event.
- Created a **permission management system** for Blade, which syncs roles with our Discord community to allow for **improved onboarding** of new team members and **heightened security** for our hackathon operations.

Lead Developer, Vice President

May 2025 - Present

DenTraceX

Orlando, FL

- **Co-founded a non-profit organization** dedicated to collecting dental records of missing persons, in order to cross-reference them with unidentified remains.
- Authored our organization infrastructure **entirely from scratch** using **React**, **ExpressJS**, **PostgreSQL**, and an **AWS S3 bucket** for secure data storage.
- Constructed a **novel** code-based representation for jaw/tooth records, allowing easy searching/filtering to identify **real-world** human remains, intended for use by **medical examiners and independent investigators**.

Cashier

February 2023 - February 2026

Publix Super Markets

Orlando, FL

- Processing customer transactions efficiently while providing **premier customer service**.
- Acquired soft skills in being adaptable to a dynamic work environment, taking up new tasks as needed.
- Working as a team to ensure the completion of all daily tasks, while keeping store operations running smoothly.

- Developed and tested **various gameplay features** in **Lua** for a Garry's Mod server with **230,000+** unique users, including **interactive items** and **foundational mechanics**.
- Built **multiple in-game levels** to be added to the server's rotation using Hammer, **creating new assets** and **optimizing performance**.
- Designed and implemented **multiple UI elements** across the server's gamemode in Lua and VGUI, furthering adoption of a **new design language**.

PROJECTS

VL-ADK – *Google ADK, Python, NVIDIA Nemotron, YOLO-E, React, FastAPI*

September 2025

- Created at **ShellHacks 2025** with a **team of 3**, won **1st place** for **NVIDIA's Hack the Future Challenge**, **2nd place** for **Microsoft's AI for Good Challenge**, and **3rd place** for **Waymo's Reimagining Navigation Challenge**.
- Allows **dynamic prompting** of a cost-effective robot, achieving **intelligent movement and spatial reasoning**, even with extremely limited sensing capabilities.
- With the assistance of a **YOLO-E** model for object detection, accomplished **structured paths** and **object search/navigation** behaviors, completely operated by a fleet of **autonomous AI agents** using **Google ADK**.
- **Authored** and **designed** the **remote-control interface**, streaming video and commands directly to/from the robot using **Websockets**.

ReStory – *Python, WhisperX, ArcFace, React, Gemini AI*

January 2026

- Worked with a **team of 4** to create a wearable and companion web-app at **SwampHacks XII**, that **helps Alzheimer's patients** passively remember their loved ones, won **1st place** overall out of **112** projects.
- Generates personal profiles with **no user input** based on face/voice data that **summarizes a person's relationship** to the user.
- Designed the web-app interface using **Figma**, then **React/Tailwind**, prioritizing Alzheimer's-friendly color/visual contrast in the design to **maximize user accessibility**.

Voiceboard | *React, TypeScript, Gemini API, Mermaid*

September 2024

- Created with a **team of 3** at **ShellHacks 2024**, won **1st place** for **Google's Hack for Social Good Challenge**.
- Authored the whiteboarding interface, allowing the entire app to be voice-controlled through **speech recognition** and Google's **Gemini AI** to massively improve accessibility.
- Implements prompt engineering through the **Gemini API** to create **context aware Mermaid diagram code**.

Lootcode – *React, TypeScript, MySQL, Docker, tRPC*

February 2024 - May 2024

- Developed a **gamified study application** with my **team of 5** over **3 months** for **Knight Hacks Project Launch 2024** to study Data Structures and Algorithms, featuring **100+ unique problems**, which won **1st place**.
- Designed and implemented interfaces for **stylized category maps**, our coding window with **test case feedback**, and our game's encounter/inventory systems.
- Accumulated **50,000+** page visits and **500+** monthly active users, featured in **Linux Magazine's** OSS section.

TECHNICAL SKILLS

Languages: Java, Python, C/C++/, C#, Lua, SQL, TypeScript, HTML/CSS, PHP**Software/Services:** MySQL, PostgreSQL, MongoDB, Redis, Node.js, Google Gemini, REST/RPC APIs**Libraries/Frameworks:** React, ExpressJS, FastAPI, Flask, Django, S3, Prisma, Clerk, JWT, tRPC, Tailwind CSS, Websockets, OpenCV, MediaPipe, pandas, YOLO-E