Carlos E. Lopez

754-215-8224 | carlos.lopez@ucf.edu | linkedin.com/in/carloselopezjr | github.com/carloselopezjr | carloselopez.dev

EDUCATION

University of Central Florida   Aug. 2024 – May 2028
Bachelor of Science in Computer Science   *Orlando, FL*

EXPERIENCE

Research Assistant   Sept. 2025 – Present
UCF SAGE Lab   *Orlando, FL*
- Investigating the performance, usage, and limitations of coding agents in open-source software development.
- Reviewing and analyzing a dataset of over **20,000** pull requests from AI agents across **500+** repositories.
- Analyzing pull requests and commits to evaluate how developers leverage AI coding tools and assess their real-world impact.

Hackathon Organizer   July 2025 – Present
Knight Hacks   *Orlando, FL*
- Collaborating with a team to plan and coordinate Knight Hacks VIII, a hackathon supporting over **1000** hackers.
- Coordinating partnerships with **10+** registered student organizations, managing workshop content, room reservations, judging schedules, and promoting broader community involvement.
- Serving as the main point of contact for RSOs, providing guidance and maintaining clear communication throughout the planning process.

Research Assistant   Mar. 2025 – Aug. 2025
UCF Analytics, Decision, and Control Lab   *Orlando, FL*
- Developed a Windows application in **C#**, leveraging **SimConnect API** to interface with **Microsoft Flight Simulator**, supporting aircraft repositioning to user-specified coordinates.
- Implemented functionality to spawn AI-controlled aircraft at user-defined coordinates.
- Optimized SimConnect backend to ensure stable event handling and dynamic coordinate updates, enhancing simulator interaction reliability and efficiency by **60%**.

PROJECTS

Riffs | *React, TypeScript, Tailwind, FL Studio, Next.js, Pitchy*   April 2025
- **1st Place** Winner for **Best App Dev** at Bitcamp 2025.
- Built a music app converting hummed melodies into guitar tabs with real-time note detection and interactive gameplay.
- Implemented a camera system to overlay visual guidance onto the user's guitar, assisting with finger positioning.
- Integrated **Pitchy API** for real-time pitch detection and **FL Studio** for key extraction.

Kmodo | *React, Tailwind, TypeScript, Next.js, tRPC, Drizzle, PostgreSQL*   Jan. 2025 – May 2025
- **1st Place** Winner of Knight Hacks Spring 2025 Projects Program.
- Developed a centralized dashboard to streamline hackathon event creation, organization, and participation.
- Constructed user input forms and frontend UI components using **React** to improve event management.
- Collaborated with the team to integrate frontend components with backend services, ensuring responsiveness.

Personal Portfolio | *React, Tailwind, TypeScript, Next.js, Last.fm*   Feb. 2025 – Present
- Created a personal portfolio website to showcase my technical journey.
- Designed responsive design with **Tailwind** for an optimized user experience across devices.
- Leveraged **Last.fm API** to showcase dynamic music listening activity in real-time.
- Improved site load performance by **40%** and boosted SEO visibility by **30%** by building with **React** and **Next.js** instead of static HTML.

HandScape | *React, Next.js, Three.js, MediaPipe, TypeScript, Tailwind*   Sept. 2025
- Developed an interactive 3D sandbox, allowing users to spawn and manipulate objects in a **Three.js** environment entirely through hand gestures.
- Leveraged **MediaPipe hand-tracking** to implement **5** distinct gestures, integrating them within the Three.js environment to enable seamless, real-time object manipulation.
- Designed the landing page 3D environment and implemented gesture logic for manipulating objects, enabling an immersive user experience.
- Improved hand-tracking gesture recognition accuracy by **30%** and reduced input lag by **20ms**, resulting in smoother object manipulation.

TECHNICAL SKILLS

Programming Languages: TypeScript, JavaScript, C#, C++, C, Python, Java, SQL, HTML, CSS
Libraries/Frameworks: React, Next.js, Tailwind, Three.js, MediaPipe, .NET, ClerkAuth, Uploadthing, BeautifulSoup
Tools/Platforms: Windows, Linux, Vercel, Railway, Node, Github, Git, VSCode, Blender, Figma, VirtualBox, Unity, PostgreSQL