# Ciaran J. McKay

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## EDUCATION

**Columbia University** **New York City, NY**
*Bachelor of Science; Physics and Computer Science* Expected: May 2024
**Clubs:** Member of the Columbia Space Initiative, Member of the Chess Club

## EXPERIENCE

**Off Peak** **New York City, NY**
*Software Engineering Intern* *June 2023-August 2023*
•Spearheaded the development of a **React-based** web platform and companion **mobile app** to promote small businesses, significantly boosting user engagement and potential revenue streams.
•Architected and rolled out a **RESTful backend** using **Express.js** and **Node.js**, optimizing user data processing, authentication, and geolocation services; this feature led to a 20% reduction in server response times.
•Designed **Docker containerization** initiatives, which streamlined app and website deployments while ensuring seamless integration with **CI/CD workflows**.
•Collaborated on **mockup data creation**, harnessing advanced data analytics strategies, ultimately informing field testing and driving key product refinements.

**Catholic University & Jefferson Lab** **Washington, D.C.**
*NSF REU Physics Research Intern* *June 2021-August 2021*
• Developed and optimized data processing algorithms using **C++** and the **ROOT software framework**, enabling efficient analysis of high-energy physics experiments.
•Implemented **Monte Carlo simulations** to calibrate and evaluate the performance of a cutting-edge particle detector, showcasing proficiency in stochastic modeling and computational methods.
•Collaborated with a multidisciplinary team, leveraging **version control (Git)** to manage codebase changes and ensure consistent data analysis methodologies.
•Presented research insights using **data visualization tools**, translating complex physics concepts into clear and comprehensible software-driven findings, emphasizing the interplay between physics and computer science.

**Alizé Ventures (Livit Lab, LLC)** **Scottsdale, AZ**
*Software Development & Finance Intern* *March 2019-July 2019*
•Refined VR application interfaces with **C# and Unity**, achieving an improved user experience and a 15% performance increase through responsive design, modular architecture, and efficient memory allocation.
Conducted **AR/VR research** in education, informing product development and increasing adoption by showcasing immersive learning experiences and enhanced student engagement.
•Developed financial models using forecasting techniques and sensitivity analysis, contributing to a 9% projected business revenue growth by optimizing financial strategies and resource allocation.

## PROJECTS

**Inventory Management Project (FoodSage) - GitHub** *July 2023*
• Built a Python and SQLite-based inventory management system for Raspberry Pi, integrated with UPC database API for real-time updates via barcode scans and RFID tags. Implemented recipe suggestion algorithms and expiration date alerts.

**Ray Tracing Project - GitHub** *June 2023*
• Built a foundational ray tracing system in C++ and C, demonstrating skills in graphics rendering and computational geometry, and is an intersection of physics and computer science.

**Facial Recognition System - GitHub** *May 2023*
• Built a facial recognition system to identify and authorize user access on Raspberry Pi. Trained in TensorFlow and loaded in Python with the OpenCV library. Ensured security by permitting access only to recognized identities, thus enhancing device security.

**CUlater App - GitHub** *March 2023*
• Built a React Native and Firebase friend-meeting dating app tailored for the Columbia University community, featuring geolocation-based matching, user profiles, and a built-in messaging system. Written primarily in JavaScript and TypeScript

## SKILLS

**Languages**: Java, Python, C++, C, C#, SQL, JavaScript, TypeScript, HTML5, CSS
**Frameworks & Libraries**: React, Spring, TensorFlow, OpenCV, Docker, Firebase, Unity
**Tools & Platforms**: Docker, Kubernetes, AWS, Jenkins, CI/CD, Git, ROOT, Monte Carlo Simulations
**Technologies**: RFID, VR/AR, Facial Recognition, Ray Tracing, RESTful APIs, Database Management