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Ciaran J. McKay

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Education

Columbia University — New York, NY
Bachelor of Science; Computer Science and Physics — *Expected May 2024*
Organizations: Columbia Space Initiative, Chess Club, Rock Climbing Club

Experience

Software Engineering Intern — June 2023 – Aug 2023
Columbia Build Lab — *New York, NY*

- Constructed a React.js web and mobile platform, integrating MySQL, achieved a 30% boost in user engagement, as evidenced by increased session times and user interactions
- Architected secure RESTful APIs using Flask, Python, JWT, and OAuth 2.0, enhancing data privacy
- Optimized backend with caching and async Python programming, improving request handling time by 15%
- Deployed Docker containers on AWS, reducing projected server costs by over 10% and maintaining 99.9% uptime
- Performed data analytics with SQL, contributing to 4 major product feature developments

NSF REU Physics Research Intern — June 2021 – Aug 2021
Catholic University and Jefferson Lab — *Washington, D.C.*

- Formulated C++ algorithms for physics data analysis, improving data accuracy by 18%
- Applied Monte Carlo simulations, achieving over 95% alignment with experimental and simulated results
- Integrated Git for computational methods on large datasets, enhancing findings in particle physics research

Software Engineering Intern — Mar 2019 – July 2019
Alizé Ventures (Livit Lab, LLC) — *Scottsdale, AZ*

- Revamped a VR content tool using C# and Unity, accelerating content delivery speed by over 25%
- Generated immersive environments with Unity 3D, applying ray tracing techniques for realism
- Designed interactive features using Unity's XR Toolkit for natural user interfaces
- Implemented mixed reality solutions with Azure Spatial Anchors and Unity Cloud, supporting 10,000+ more concurrent users and enhancing user satisfaction by 15% according to user trials

Projects

ModUniverse App [github] | *Python, PyQt5, Matplotlib, Runge-Kutta Methods* — Oct 2023 – Present

- Developed a Python-based 3D solar system simulator with real-time dynamics, using NumPy and Runge-Kutta methods for gravitational interaction modeling
- Integrated an interactive PyQt5 GUI with dynamic body creation with quiz feature, enhancing learning engagement by 40% and knowledge retention by 50% based on user surveys

CUResale App [google-drive] | *Swift, XCode, Firebase, Figma* — Sept 2023 – Dec 2023

- Created an iOS marketplace app for Columbia University, featuring product listing, search, and in-app messaging
- Curated a user-friendly UI with Balsamiq and Figma, leading to a 45% increase in approval from initial surveys

FoodSage [github] | *Python, SQLite, RaspberryPi* — June 2023 – July 2023

- Built a Raspberry Pi inventory system using Python and SQLite, with UPCitemdb API for product tracking
- Introduced recipe suggestions and expiration alerts, reducing food waste by over 20% in personal use cases

Ray Tracing Engine [github] | *C++, C, STB Image Write, Computational Geometry* — May 2023 – Aug 2023

- Developed a C++ ray tracing engine, improving rendering speed 35% and memory efficiency by 22% from baseline
- Produced photorealistic images showcasing complex light interactions, demonstrating engine's capabilities

Skills

Languages: Java, Python, C, C++, C#, Swift, Kotlin, SQL (Postgres), JavaScript, HTML, CSS, R
Frameworks: React, .NET, Node.js, Flask, Django, Material-UI, FastAPI, Vue.js, JUnit, Selenium, Spring, Spring Boot
Libraries: pandas, NumPy, Matplotlib, PyQt5, SciPy, TensorFlow, Keras, PyTorch, Astropy
Developer Tools: Git, AWS, Docker, Kubernetes, Google Cloud Platform, Jenkins