

# MARCUS ADAIR

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## PROFESSIONAL EXPERIENCE

### Scientific Computing and Imaging Institute

Salt Lake City, UT

*Graduate Research Assistant*

*Aug. 2023 – Present*

- Developing On-Demand Fakequakes (ODF), a full-stack web application with an AWS Cloud workflow for launching earthquake simulations, targeted for NASA and other scientific use cases
- Integrated ODF with National Data Platform (NSF-funded cyberinfrastructure) for dataset registration and discovery capabilities via API requests and secure authentication (Keycloak, OAuth)
- Built a CI/CD pipeline using GitHub Actions to automate Docker image builds, deployments to AWS, and updates to the AWS CloudFormation stack via AWS CDK in Python

### University of Oregon

Eugene, OR/Salt Lake City, UT

*Full Stack Software Engineer Intern*

*May. 2024 – Aug. 2024*

- Developed a Python web app (Plotly Dash) with a dashboard interface for customizing earthquake simulation parameters and created a parallelized workflow for simulations on AWS
- Containerized the dashboard and the simulation software (plus dependencies) using Docker, deploying them on AWS ECS Fargate
- Leveraged AWS Lambda, S3, ECS, IAM, CloudFormation, and other AWS services to automate Cloud instance spawning and workflow management

### Scientific Computing and Imaging Institute

Salt Lake City, UT

*Undergraduate Research Assistant*

*Mar. 2022 – Aug. 2023*

- Developed an automated parallel workflow for simulations using Open Science Grid, Python, and Bash, reducing simulation time from 20+ days to under 1.5 days for 30,000+ simulations
- Containerized simulation software and dependencies with Singularity
- Wrote Python code for simulating the offloading of workflow jobs to the Cloud and conducted experiments

## PROJECTS

### marcusadair.com – Portfolio Website (TypeScript, React)

- Developed a portfolio website to showcase my skills, projects, resume, and more in a simple, user-friendly interface
- Implemented a full-stack architecture using React, Node.js, Typescript, HTML, and CSS
- Automated deployment to GitHub Pages with a simple CI/CD pipeline

### Spatial Enrichment Data Engine – Senior Capstone Project (TypeScript, Angular)

- Led front-end development on a geocoding web application in collaboration with Idaho National Laboratory for senior capstone project
- Leveraged Angular/.NET stack, TypeScript, CSS/HTML, and more to implement front-end
- Designed Angular components, interfaced with the Esri API to integrate library widgets, built GET requests to the back end, documented and implemented user stories

## SKILLS

Python, Bash, C#, TypeScript, HTML, CSS, SQL, Angular, React, Flask, Git, Containers, CI/CD, AWS, IaC, Agile

## EDUCATION

### University of Utah

Salt Lake City, UT

*Master of Science in Computer Science*

*May 2025*

- Courses: Graduate Algorithms, Adv. Database Systems, Human Computer Interaction, Deep Learning

### University of Utah

Salt Lake City, UT

*Bachelor of Science in Computer Science*

*May 2023*

- Web/Mobile Development Track Certificate
- Courses: Web Software Architecture, Mobile App Programming, Database Systems, Algorithms

## NOTABLE ACHIEVEMENTS

- First Author on ACM-Published Paper: (<https://dl.acm.org/doi/10.1145/3624062.3624276>) Nov. 2023
- SC23 Workshop Presenter: WORKS23 Nov. 2023