Zeke Bickham

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EDUCATION

The University of Texas at Austin May 2024

Bachelor of Science, Computational Engineering

Overall GPA 3.5

Minor in Business

Certificate in Computational Science and Engineering (Oden Institute)

SKILLS

Technical Skills: Python, Java, MATLAB, C++, PostgreSQL, AWS, Linux, Git, Flask, Docker, Kubernetes, Microsoft Office

EXPERIENCE

Cemvita Factory Inc. November 2023 – May 2024

Computational Biology Intern

- Developed, tested, and debugged Python and Elixir scripts to improve biological data processing efficiency
- Configured SQL databases and AWS servers to facilitate user interaction with stored data
- Automated querying of Amazon S3 data for easy access and storage in the company's database

PROJECTS

Computational Analysis of Hydraulic Actuators January 2024 – May 2024

In collaboration with Sandia National Laboratories

- Collaborated with experts from Sandia National Laboratories to validate and enhance a low-cost hydraulic actuation system via computational methods, ensuring the system met specific performance requirements
- Utilized MATLAB Simulink and Simscape to model and simulate key components of the hydraulic actuator system, including antagonistic pistons and an involute cam, verifying proper motion under applied forces
- Performed structural analysis using Ansys and SolidWorks simulations and conducted computational fluid dynamics to ensure material integrity and optimal fluid flow within the hydraulic actuator system

2D Elasticity Analysis Using Finite Element Method January 2023 – May 2023

- Developed a Python program for finite element analysis to solve 2D elasticity problems, calculating nodal displacements, strains, and stresses for a two-dimensional solid structure using 3-noded triangular elements
- Created detailed plots of deformed and undeformed meshes, and conducted stress analysis and interpolation, showcasing proficiency in numerical methods and data visualization

Kepler Exoplanet RESTful API March 2022 – May 2022

- Developed and deployed a containerized Flask application on a Kubernetes cluster for analyzing Kepler exoplanet data, utilizing Redis for job queuing, resulting in scalable and reliable data processing
- Enhanced the application's functionality by designing and implementing REST API endpoints for CRUD operations and data analysis jobs, improving user interaction with the Kepler time series data

ISS Data Query Application January 2022 – March 2022

- Built a containerized Flask application for querying and returning International Space Station (ISS) positional and sighting data, significantly reducing data retrieval time and improving data accessibility for users
- Implemented RESTful API endpoints to allow users to query ISS data by epoch, country, region, and city, enabling simple access to complex data sets and improving the efficiency of data analysis
- Dockerized the application, ensuring easy deployment and consistent performance across environments

ADDITIONAL INFORMATION

Interests: Software Development, Computational Finance, Data Analytics, Advanced Technologies, Triathlon

Awards: Eagle Scout - Boy Scouts of America