Ryan Job

Software Engineer

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EXPERIENCE

CSU Data Science Research Institute — *Graduate Research Assistant*
JUNE 2023- PRESENT

- Designing workflows to promote reproducible research at the DSRI.
- Parallelizing and distributing research software, including PyTorch models.
- Working with systems administrators to improve Slurm-based HPC clusters.
- Developing data storage and processing solutions with Globus and Snakemake.
- Teaching good parallel and distributed programming practices.
- Mentoring an undergraduate researcher on the use of HPC systems.

CSU Computer Science — *Graduate Teaching Assistant*
AUGUST 2022 - JUNE 2023

- Software Engineering (Fall '22), Foundations of Computer Systems (Spring '23).
- Managed and mentored undergraduate teaching assistants.
- Taught recitation lectures to reinforce course learning objectives.
- Assisted students with learning course material and debugging assignments.
- Created new assignments and automated grading scripts.

NorthStar Medical Radioisotopes — *Software Engineer II*
JUNE 2018 - JUNE 2022

- Worked in a hybrid agile-waterfall environment.
- Developed software for a novel medical radioisotope separation system.
- Performed requirement analysis, software design and development, and verification and validation tasks.
- Complied with federal regulations and guidelines to ensure safety, including 21 CFR Part 11 and FDA medical device guidelines.
- Created GUI applications in a Windows environment and custom firmware in an embedded microprocessor system.
- Designed and implemented a domain-specific language for nuclear scientists and biologists to program and control fluid movement devices.

EDUCATION

Colorado State University — *Masters of Science*
AUGUST 2022 - PRESENT

- MS Computer Science.
- Degree Completion: September 15, 2024.
- Working on automatic reduction simplification using the polyhedral equational model of computation. Applying this work to RNA folding.
- Developing this as a compiler optimization within the AlphaZ system.

University of Wisconsin-Madison — *Bachelors of Science*
AUGUST 2014 - May 2018

BS Computer Engineering, Computer Science, Mathematics.

PUBLICATION

R. Job, S. Rajopadhye, "Reuse Analysis via Affine Factorization," in *14th International Workshop on Polyhedral Compilation Techniques (IMPACT '24)*, 2024.

SOFTWARE DEVELOPMENT

Compiler Development
ANTLR, Eclipse EMF, JCUP, JLex, MLIR, Xtext

Distributed Computing
Hadoop, MapReduce, MPI, Slurm, Spark, YARN

High-Performance Computing
CUDA, Intel Advisor, Jupyter Notebooks, MKL, OpenMP

Machine Learning
Conda, Dask, Docker, Numpy, Pandas, PyTorch, Ray, Singularity, Snakemake

Polyhedral Model of Computation
AlphaZ, isl, islpy

UI and Web Development
Bootstrap, CSS, HTML, JavaScript, PHP, React, WinForms, WinUI, WPF

SOFTWARE ENGINEERING

CI/CD
Azure DevOps, GitHub Actions, Jenkins, MSBuild

Data Management
Globus, HDFS, MongoDB, PostgreSQL, SQL CE, SQLite

Documentation
Jupyter Notebooks/Labs, LaTeX, Markdown, MS Word

Project Management
Agile, Jama, Jira, MS Project, Trello

Source Control
Git, GitHub, Subversion (SVN)