Mines ITS: Cyberinfrastructure and Advanced Research Computing (CIARC)

# Cost Clarity App for Open-On-Demand

Company Background:

ITS' CIARC team works to identify research needs across Mines and to provide research computing and data resources, services and infrastructure to advance research and achieve our Mines @150 vision. CIARC will assist faculty by identifying information technology solutions and facilitating their research in areas such as: high-performance computing, evaluation of cloud vs. on-premise computing, storage and transfer of research data, project management with respect to IT solutions, etc. By providing consultation services and by acting as a liaison between faculty and ITS groups, CIARC is able to efficiently provide customized solutions to fit research needs. https://ciarc.mines.edu

Problem description:

The Cyber-Infrastructure and Advanced Research Computing (CIARC) group needs to provide details about jobs billed on our High Performance Computing (HPC) Cluster, Wendian, here at Mines. The Wendian Cluster uses a SLURM scheduler to queue jobs to run on our nodes for which a charge is incurred for each core-hour used, and as the job finishes a SLURM database is updated. This web application written in Ruby on Rails is a modification of the current Open-On-Demand portal application "Job Composer" and will update a user's job copy of a database with an added column for cost, core-hours, etc. displaying in a table format for monthly job costs.

Project Goals:

- Build user specific database from SLURM database, update after job finishes, and rebuild on request.
- Query SLURM running job queue and include real-time costs to display in app
- Define specifications for user interface for interacting with database.
- Develop code for Open-On-Demand app for displaying parts of the user specific database, and GUI for user control
- Access SLURM database daemon from increased load from app queries and determine if expanded resources are needed.

Team Size:

A team of three to four.

Skills

- Coding in Ruby-on-rails, HTML rendering
- User level knowledge of bash and python scripts
- Knowledge of database sqlite3 package used in Ruby
- SLURM job scheduler and Open-On-Demand code
- HPC research ecosystem

Location of Work:

The work location is extremely flexible and the students will have the opportunity to either work in person on campus or remotely whichever works best for them.