Joel Courtney

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EDUCATION

CU BOULDER

BS in Computer Science and Applied Math
Expected May 2021
College of Engineering
Cum. GPA: 3.94 / 4.0
Major GPA: 3.86 / 4.0

BA in Astronomy
Expected May 2021
Astrophysics emphasis
College of Arts and Sciences
Major GPA: 3.99 / 4.0

RALSTON VALLEY H.S.

Graduated May 2016
Unweighted GPA: 3.94
Weighted GPA: 4.72

COURSEWORK

COMPUTER SCIENCE

Machine Learning
Operating Systems
Object Oriented Analysis and Design

PHYSICS

Electricity and Magnetism
Quantum Mechanics (Spring 2020)
Quantum Computing (Spring 2020)

MATHEMATICS

Fourier Series
Complex Variables
Statistical Methods

SKILLS

PROGRAMMING LANGUAGES

Experienced:
Rust • C++ • C • Python • MatLab

Proficient:
Java • Kotlin • Scala • JavaScript • Mathematica • LaTeX • R • MySQL

Familiar:
C# • Bash • HTML • CSS • PHP • Ruby

TOOLS

Git • ANTLR • GNU Make • Maven • OpenGL • Chef • Jenkins

TECHNIQUES

Agile (Scrum) • UML Diagramming

WORK HISTORY

LEARNING ASSISTANT | CU Department of Applied Math

August 2019 - Present

- Assisted with the Fourier Series and Boundary Value Problems course at CU.
- Worked with students both one-on-one and in groups to help with homework problems and reinforce their learning.
- Ran reviews, guided final projects, proctored exams and graded homeworks.

UNIX SYSTEMS ADMIN | CU Office of Information Technology

June 2017 – June 2018

- Helped manage CU's Unix-based web servers, compute clusters, and build hosts.
- Worked with Chef, Apache, Jenkins, and other Unix tools.
- Worked in data centers to maintain and repair servers.

RESEARCH

M-DWARF STELLAR FLARES | LASP at CU Boulder

March 2019 – October 2019

- Used the GALEX and Gaia DR2 databases to analyze high-cadence lightcurve data of stellar flares on nearby M-Dwarf stars.
- Managed a ~200MB AWS MySQL database for data collection and organization.
- Used PyRAF for data reduction and correction of raw CCD spectra.
- Supervised by **Dr. Adam Kowalski**.

EXTRACURRICULARS

- Founding member of the CU Boulder Racing Team; software lead for the Formula SAE team, responsible for electronic throttle and shifting, input monitoring and data acquisition
- Member of and former officer for Tau Beta Pi, Colorado Beta chapter (Engineering Honor Society)
- Member of Phi Beta Kappa, Colorado Alpha Chapter (Arts and Sciences Honor Society)
- Member of the Engineering Honors Program at CU

PROJECTS

HADRON | A scripting language for physics computation

- Hadron is intended to make physical and numerical computation simple with native support for units, matrix operations, complex numbers, and automatic differentiation.
- The interpreter (in progress) uses **ANTLR** and Oracle's Truffle API, and runs on the **GraalVM**.