

Joel Courtney

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EDUCATION

CU BOULDER

BS IN COMPUTER SCIENCE AND APPLIED MATH

Expected May 2021

College of Engineering

Cummulative 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 Complex Variables courses 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

- Managed 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

CU BOULDER RACING TEAM | AUTOMOTIVE RACING CLUB

- Founding member
- Software lead for the Formula SAE team, responsible for electronic throttle and shifting, input monitoring and data. acquisition

TAU BETA PI | ENGINEERING HONOR SOCIETY

- Member since 2017
- Recording Secretary for Colorado Beta Chapter, 2017-2018

PHI BETA KAPPA | ARTS AND SCIENCES HONOR SOCIETY

- Member since 2019

ENGINEERING HONORS PROGRAM | AT CU BOULDER

- Member since 2017

PERSONAL PROJECTS

HADRON | A SCRIPTING LANGUAGE FOR PHYSICS COMPUTATION

- Hadron is designed to make physical and numerical computation simple with built-in 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**.