Dylan Scott Carroll

Software Engineer

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Education

Computer Science B.S — *Western Washington University* — 3.98 GPA — *Magna Cum Laude* Sep 2019—Jun 2024

- **Minor in Mathematics** — **Minor in German** — CS Distingushed Scholar — CS Pre-Masters

Computer Science M.S. — *Western Washington University* — 4.00 GPA (in-progress) Sep 2025—Jun 2025

Experience

Graduate Research Assistant — *Hutchinson Machine Learning Research Group* Sep 2021—Present

- Solving problems in the automatic analysis of astronomical data in the domains of stellar imagery and stellar spectroscopy using advanced deep learning techniques like CNNs, transformers, and diffusion models.
- Constructing robust machine learning and data science pipelines using tools such as PyTorch, NumPy, and Pandas.

Graduate Teaching Assistant — *Western Washington University* Jun 2024—Present

- Leading computer science labs, holding regular office hours, providing individualized assistance, and grading student submissions on topics including data structures, algorithms, computer systems, and machine learning.

Software Developer Intern — *The International Society for Optics and Photonics* Jan 2023—Mar 2023

- Developed a versatile and extensible test automation framework to increase API test coverage and streamline the development of additional tests using C#, JavaScript, and Postman.
- Created comprehensive documentation detailing the design/usage of the framework to equip future developers.

Web Developer — *Center for Instructional Innovation and Assessment* Aug 2022—Dec 2022

- Developed and maintained 3 university websites using HTML, CSS, and Drupal, optimizing to accessibility standards.
- Produced new webpages for annual publications, collaborating with stakeholders to meet content requirements.

Computer Science Tutor — *Western Washington University* Jun 2022—Sep 2022

- Provided in-person instruction on a variety of advanced computer science topics to over 50 students.
- Tailored teaching style to each student, assessing knowledge gaps, and adapting communication methods.

Research

- *Generating Synthetic Stellar Spectra with Deep Learning: A Denoising Diffusion Probabilistic Model Approach* (in-progress)
- *A Spatio-temporal Data-cube Approach to Classification of Variable Stars: A Catalog of Candidate Variable Stars from the TESS FFI Raw Data* (pending review)

Skills

Languages: Python, C#, .NET, C, C++, JavaScript, Java, Julia
Web: HTML5, CSS, SQL, Flask, RegEx, MongoDB
ML: PyTorch, Lightning, NumPy, Pandas, Skeletonkey, WandB
Tools: VS Code, VIM, Git, GitHub, SSH, bash, Linux,
Non-technical: Advanced proficiency in German (Level C1)

Projects

Skeletonkey — *Python*

- A Python package providing lightweight and flexible configuration management for machine learning pipelines.

3D Raytracing Engine — *Julia* Nov 2024

- Using global illumination to render scenes with materials with diffuse, emissive, reflective, and refracrive materials.

LR(1) Parse Table Generator and Parser — *Python, RegEx* Sep 2024

- Parse table generator that produces a parsing table from a textual description of a context-free grammar.

Class Schedule Generator — *JavaScript, HTML, CSS* Jun 2021

- Web app that algorithmically generates and visualizes optimal class schedules based on scraped WWU course data.
- Factors in user-specified preferences and constraints to intelligently produce optimized schedules.

Abalone Game Agent — *Python* Aug 2021

- AI agent based on minimax and alpha-beta pruning that plays the abstract strategy game Abalone at human levels.

Terminal Calculator — *Python, RegEx* Nov 2020

- Lightweight scientific calculator shell application optimized for ease of use.