Dylan Scott Carroll
Software Engineer

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Education

Computer Science M.S. — *Western Washington University* — 4.00 GPA   Sep 2024—Sep 2025
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

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—Aug 2025
- Leading computer science labs, holding regular office hours, providing individualized assistance, and grading student submissions on topics including computer systems, algorithms, data structures, and machine learning

Test Automation 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
- Built 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

Research

- *Generating Synthetic Stellar Spectra with Deep Learning: A Denoising Diffusion Probabilistic Model Approach* — in-progress
- Co-Author — Qiang et al., Astrophysical Journal, 2025 — *A Spatiotemporal Data Cube Approach to Classification of Variable Stars*. 984(1), 49. — https://doi.org/10.3847/1538-4357/adc2fc

Skills

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

Projects

Rubik's Cube Solving Robot — *MicroPython, Onshape*   May 2025
- Developed motion planning and control logic on Raspberry Pi Pico, driving motors via MicroPython GPIO
- Designed custom manipulator components to reliably interface a Rubik's Cube with stepper and servo motors

Skeletonkey — *Python*   May 2024
- A Python package providing lightweight and flexible configuration management and application initialization

3D Raytracing Engine — *Julia, C++*   Nov 2024
- Global illumination renderer supporting scenes with diffuse, emissive, reflective, and refracrive material shaders

LR(1) Parse Table Generator and Parser — *Python, RegEx*   Sep 2024
- A parser capable of consuming text descriptions of a context-free grammars with support for attribute grammars

Blitz OS Kernel — *KPL*   Mar 2023
- Implemented OS primitives—scheduling, context switching, synchronization, virtual memory, and file I/O
- Built in KPL for the RISC-like Blitz VM; debugged low-level traps, interrupts, and system calls

Abalone Game Agent — *Python*   Aug 2021
- Game agent based on minimax and alpha-beta pruning that plays the abstract strategy game Abalone at human levels