

Willow Hughes

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Education

MS	Western Washington University Computer Science, AI/ML Specialization	Bellingham, WA Jan 2026 – Mar 2027
BS	Western Washington University Computer Science, Pre-Masters and Honors Curriculum 3.84 GPA	Bellingham, WA Jan 2023 – Dec 2025

Experience

Deep Learning Research Assistant Hutchinson Machine Learning Research Group	Bellingham, WA Dec 2025 – Present
<ul style="list-style-type: none">Developing ML models using LiDAR geospatial data to detect archaeological sites in collaboration with field archaeologistsBuilding training pipeline with ground-truth survey data to automate site identification and prioritization for excavation	
Undergraduate Research Assistant Western Washington University	Bellingham, WA Oct 2024 – Dec 2025
<ul style="list-style-type: none">First author on research paper investigating Test-Driven Development in CS education; submitted to ITiCSE 2026 conference	
Software Engineering Intern Premera Blue Cross	Seattle, WA Jun 2024 - Aug 2024
<ul style="list-style-type: none">Led early stages of migration project of a C#/SQL web app to AzureBuilt CI/CD (YAML) pipelines and IaC (Bicep) templates for core services, reducing deployment time by >40%Implemented AuthN/AuthZ with Azure's Entra ID and published a guide on the internal Premera wikiCollaborated directly with Microsoft engineers to optimize cloud migration strategy and report findings to internal teams	

Skills

Programming Languages: Python, Java, C, C#, SQL, JavaScript, Bash

Tools: Git, Linux/Unix, Azure, NumPy, PyTorch, CI/CD, IaC, Android Studio, Windows

Coursework: Machine Learning/Deep Learning, Statistics, Data Structures and Algorithms, Operating Systems, SDLC

Projects

Conversational AI Spanish Tutor (Python, TypeScript, Flask, AI APIs)

- Building a real-time voice conversation system for language learning with Python/Flask backend and React frontend
- Currently optimizing the STT -> LLM -> TTS pipeline to achieve <1s voice response

Deadwood Board Game (Java, Maven, JavaFX, FXML)

- Built a digital board game featuring a JavaFX GUI with real-time updates, and XML-based game data parsing

Multithreaded Image Processing Application (C, POSIX Threads)

- Developed a C program utilizing POSIX threads to implement a Laplacian edge detection algorithm on PPM images
- Engineered an efficient image filtering pipeline, achieving up to a ~70% runtime reduction through optimized thread synchronization and workload distribution

Multi-Client Chat Application (C, Sockets)

- Implemented scalable TCP chat server supporting 255+ concurrent clients with real-time message routing, event-driven architecture, and non-blocking I/O using select() for efficient multi-threaded performance

Involvement

Competitive Programming Club	Jan 2024 – Present
<ul style="list-style-type: none">Work in small teams to solve leetcode and other coding problems to get extra problem solving practice and to prepare for competitions such as the International Collegiate Programming Contest (ICPC)	

Orchestra & Band Involvement	2013 – Present
<ul style="list-style-type: none">Played in orchestras for 8 years and actively perform in bands	