

# Willow Hughes

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## Education

<b>MS</b>	<b>Western Washington University</b> <i>Computer Science, AI/ML Specialization</i>	<i>Bellingham, WA</i> <i>Jan 2026 – Mar 2027</i>
<b>BS</b>	<b>Western Washington University</b> <i>Computer Science, Pre-Masters and Honors Curriculum</i>   <i>GPA: 3.84 / 4.00</i>	<i>Bellingham, WA</i> <i>Jan 2023 – Dec 2025</i>

## Experience

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

## 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*

- 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*

- Played in orchestras for 8 years and actively perform in bands