

# ETHAN VILLALOVOZ

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## Education

### Washington State University, Honors College

Aug 2021 - May 2025

Bachelor of Science in Computer Science — Minor Mathematics, GPA: 3.94/4.0

Pullman, WA

- Senior Design Project: Retrieval-Augmented Generation (RAG) App Using Knowledge Graph and Vector Search
- Relevant Coursework: Artificial Intelligence, Machine Learning, Object-Oriented Programming, Probability & Statistics, Data Mining, Design & Analysis Algorithms, Optimization, Software Engineering, Data Structures, Linear Algebra

## Technical Skills

**Languages:** Python, C/C++, SQL, JavaScript, TypeScript, HTML/CSS, C#, MATLAB, R, Haskell, Bash, Swift

**Developer Tools:** Git, GitHub, Docker, Conda, VS Code, PyCharm, Google Colab, AWS, CI/CD, MLflow, DVC, SQLite

**Libraries/Frameworks:** React, FastAPI, PyTorch, TensorFlow, scikit-learn, Pandas, NumPy, SQLAlchemy, Pydantic, Hugging Face, LangChain, OpenCV, Flask, Tailwind CSS, Next.js, Vite, REST API, Matplotlib, Seaborn, Linux, .NET, ROS

## Work Experience

### Meta x MLH

Jun 2025 - Present

Production Engineering Fellow

Remote

- Built and deployed a responsive full-stack personal portfolio web application using **HTML/CSS**, **Flask**, **Jinja2**, and **Leaflet.js**, hosted on a **DigitalOcean** VPS, enhancing real-world software engineering and DevOps skills
- Configured a **CentOS**-based server environment, implemented secure **SSH key authentication**, and automated DNS management with **DuckDNS**, enabling persistent availability and secure access to deployed web applications

### Carnegie Mellon University

Jun 2024 - Aug 2024

Robotics Institute Summer Scholar

Pittsburgh, PA

- Developed a novel hierarchical **reward learning framework** using **Bayesian inference** to align robotic actions with human preferences from iterative **state corrections**, significantly enhancing robot adaptability
- Implemented a **proactive clarification dialogue** system enabling robots to resolve uncertainty through targeted human queries, improving task accuracy, reducing error rates, and advancing research in interactive human-robot collaboration
- Engineered a modular, extensible **Python**-based simulation environment using **Markov Decision Processes (MDP)**, supporting robust evaluation and iterative development of learning algorithms in simulated robotics tasks

### Google

May 2023 - Aug 2023

STEP Intern

Sunnyvale, CA

- Developed and deployed **5 C++ and SQL**-based analytics jobs for internal database queue metrics, significantly reducing operational costs and enabling data-driven decision-making in collaboration with engineering stakeholders
- Optimized data sampling strategies to scale job execution from **1%** to **100%** dataset coverage within **4 hours**, achieving a **66%** reduction in runtime and improving the scalability, accuracy, and efficiency of internal analytics workflows
- Built interactive, real-time dashboards using **HTML** and **SQL**-based queries, delivering actionable insights to internal teams across engineering and operations, and enabling faster decision-making through intuitive visualizations
- Implemented live-update statistical features on client dashboards with **HTML** and database-driven queries, enhancing stakeholder visibility into queue activity, reducing detection latency, and enabling more responsive system oversight

## Projects

### SentiSync – Real-Time YouTube Sentiment Analysis

Tech Stack: Flask, React, MLflow, DVC, Docker, AWS

- Built a real-time sentiment analysis system with a Chrome Extension frontend and **Flask API** backend, enabling instant visualization of YouTube comment sentiment using a fine-tuned **LightGBM** model and **TF-IDF** features
- Implemented a complete **MLOps pipeline** with **DVC** for reproducible data workflows, **MLflow** for experiment tracking, and **Docker + AWS EC2/ECR** CI/CD deployment using GitHub Actions and self-hosted runners

### CodePrep.AI – AI Coding Interview Prep

Tech Stack: React, FastAPI, Clerk, Hugging Face, SQLite

- Designed and deployed a full-stack platform for interactive coding interview prep that generates unique, difficulty-based challenges via **Meta-Llama-3-8B-Instruct**, with real-time feedback, quota tracking, and historical review
- Engineered a secure, responsive frontend in **React** with **Clerk** authentication and built a modular **FastAPI** backend with **SQLAlchemy**, **Pydantic**, and **Ngrok**-verified webhooks for seamless user management and LLM integration

### IntelliCrawl – Autonomous AI Research Agent

Tech Stack: LangChain, LangGraph, Firecrawl, OpenAI, Pydantic

- Engineered an autonomous CLI-based research agent for developer tool discovery using **LangChain**, **LangGraph**, and **Firecrawl**, with support for async workflows, caching, LLM-driven analysis, and multi-format exports