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, GitLab, Docker, Conda, AWS, Google Colab, Vercel, SQLite, VS Code, Xcode, Rider, CLion

Libraries/Frameworks: PyTorch, TensorFlow, scikit-learn, Hugging Face, OpenAI Gym, NumPy, Pandas, OpenCV, FastAPI, Flask, SQLAlchemy, Pydantic, REST API, React, Next.js, Tailwind CSS, Avalonia, .NET, ROS, Linux

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 and reducing errors in simulated human-robot collaboration scenarios
- Engineered a modular and extensible **Python**-based simulation environment utilizing **Markov Decision Processes (MDP)**, enabling robust testing and validation of algorithms for interactive robotic learning

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 for 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 substantially enhancing system performance
- Built interactive, real-time dashboards using **HTML** and **SQL**-based queries, empowering clients with immediate insights into queue statuses and facilitating proactive operational management
- Implemented live-update statistical features on client dashboards with **HTML** and database-driven queries, improving user accessibility and visibility into pending queue activities, driving faster issue resolution

Projects

DDPG - Paper Reimplementation Tech Stack: TensorFlow, OpenAI Gym, Python

- Reimplemented the **Deep Deterministic Policy Gradient (DDPG)** algorithm using **TensorFlow 2.x** and **OpenAI Gym**, featuring modular architecture, hyperparameter tuning, and experiment tracking with **TensorBoard**

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

FaceTrack - Face Attendance System Tech Stack: React, FastAPI, SQLite, OpenCV, face_recognition

- Built an end-to-end face recognition system to automate attendance tracking using **OpenCV** and **face_recognition**, supporting both real-time webcam input and batch image uploads with robust face embedding and matching logic
- Developed a full-stack web application with a responsive **React** frontend and scalable **FastAPI** backend, integrating image upload APIs, batch processing pipelines, and persistent **SQLite** storage for live attendance retrieval