Ernesto Ibanez Jr.

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Education

Arizona State University — Tempe, AZ
M.S. Robotics and Autonomous Systems (AI) — *Jan. 2026 – May 2027*
- **Grades:** 4.0 GPA
- **Scholarships:** Graduate College Accelerated Master's Scholarship

Arizona State University — Tempe, AZ
Bachelor of Science in Computer Science — *Jan. 2024 – Dec. 2025*
- **Grades:** 3.97 GPA, Dean's List

Experience

Rubitection Inc. — September 2024 – December 2024
AI/ML Intern — *Remote*
- Developed a **Selenium-based web scraping** tool, **expanding the companies dataset by 2x** for future machine learning applications.
- Designed and implemented a high-accuracy image classification model using **PyTorch** and **transfer learning**, achieving **95.83% accuracy**, **94.03% precision, recall, and F1-scores** to effectively distinguish between clean and invalid images.
- Collaborated on building a **Flask web application** integrated with **AWS SageMaker**, facilitating image uploads and laying the groundwork for an advanced image segmentation model, while gaining proficiency in cloud services and deployment.

Projects

ASU Capstone Management Platform | *Next.js, MySQL, Docker, Node.js, TypeScript*
- Collaborated with a team of 6 students and a faculty member to develop and deploy a CS/CSE Capstone platform **used by 400+ students, 50+ sponsors, and faculty** to manage project proposals, seminar submissions, and student assignments.
- Built admin dashboards for reviewing and approving proposals, managing assignments, and tracking unassigned students — **cutting faculty manual workload by about 86%.**

MiniGPT | *Python, PyTorch*
- **Architected** a decoder-only **Transformer** language model from scratch in **PyTorch**, implementing core components including **Multi-Head Self-Attention**, **Layer Normalization**, and **Positional Embeddings**.
- **Engineered** a custom **Byte-Pair Encoding (BPE)** tokenizer with **GPT-4 style regex splitting**, optimizing vocabulary generation and compression ratios for efficient text processing.
- Created a high-performance training loop with batch processing and **GPU acceleration (MPS/CUDA)**, optimizing data throughput for large-scale text datasets.

ML-Powered Rock-Paper-Scissors Robot | *Python, C++*
- Engineered a real-time gesture recognition system using Python, OpenCV, and MediaPipe, achieving approximately **90% gesture detection accuracy** for Rock-Paper-Scissors gameplay.
- Implemented and compared three predictive models (**Conditional Probability, Markov Model, Q-Learning**), with the Markov model improving win rate against human players **from 33% to over 50%** after about 50 rounds.
- Integrated machine learning predictions with Arduino-controlled robotic hand, enabling **physical response within 1 second** of user input and **successfully executing over 200+ rounds of interactive**, AI-powered gameplay.

Technical Skills

Languages: Java, Python, C/C++, SQL, JavaScript/TypeScript, HTML/CSS
Frameworks: React, Node.js, PyTorch
Developer Tools: Git, Postman, Google Colab, Jupyter Notebook, Linux, Docker