

# Ernesto Ibanez Jr.

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## EDUCATION

### Arizona State University

*M.S. Robotics and Autonomous Systems (AI)*

- **Grades:** 4.0 GPA
- **Scholarships:** Graduate College Accelerated Master's Scholarship

Tempe, AZ

Aug. 2026 – Dec. 2027

### Arizona State University

*Bachelor of Science in Computer Science*

- **Grades:** 3.97 GPA, Dean's List

Tempe, AZ

Jan. 2024 – Dec. 2025

## 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%**.
- Containerized the application using Docker and **deployed it for real-world use on ASU's infrastructure**, achieving stable performance and smooth live testing feedback.

### 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.

### Distributed AI Training Platform | *Python, PyTorch, Flask, JavaScript*

- **Architected and developed** a distributed machine learning training platform using PyTorch DistributedDataParallel (DDP), enabling parallel processing across 3 worker nodes to **accelerate model training by up to 60%** compared to non-distributed approaches.
- **Engineered RESTful API with Flask** backend featuring real-time training status polling, parameter validation, and comprehensive error handling for robust client-server communication.
- **Implemented neural network architecture** from scratch using **PyTorch**, achieving **95%+ accuracy** on MNIST digit recognition with configurable hidden layers and ReLU activation functions

## 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