MIGUEL ANGEL PINEDA

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PROFESSIONAL SUMMARY

Computer Science senior at Florida International University (3.98 GPA, expected December 2026), with three engineering internships and a year as one of two engineers on a DOJ-funded VR training platform. On that platform, co-architected a fully offline distributed system over WebRTC, cut end-to-end latency from roughly 7 seconds to under 500ms, and fine-tuned the LLM and speech model that drive it. More recently built a retrieval pipeline over 333 pages of IRS tax publications that answers at 98.3% accuracy, with a citation on every answer. Also writes Spring Boot services in Java and Python ETL pipelines, deployed on Google Cloud Platform and Docker.

EDUCATION

Florida International University **Expected December 2026**

B.S. in Computer Science, GPA 3.98 | Miami, FL

- **Coursework:** Operating Systems Principles, Net-Centric Computing, Computer Architecture, Data Structures & Algorithms

EXPERIENCE

AI Systems Researcher **May 2025 – Present**

DOJ-Funded De-escalation VR Training Grant, Florida International University | Miami, FL

- **Distributed systems:** Co-architected a local-first, fully offline system keeping two Apple Vision Pro headsets in sync with a central Mac Studio server over WebRTC, and led the migration off legacy WebSockets that cut end-to-end latency from roughly 7 seconds to under 500ms.
- **Applied machine learning:** Fine-tuned an LLM (Qwen3.5-35B-A3B) on proprietary transcripts to drive the platform's character dialogue and tool-calling pipeline, and fine-tuned a Whisper model into a real-time turn-detection classifier trained on 41.4GB across 270,946 rows.
- **Test automation:** Built two automated stress and integration testing systems, dummy WebRTC clients at 100–500 messages/minute and a Unity Test Framework suite at 30–150 actions/minute, cutting pre-demo bug-hunting from 5–10 business days to 1–2.
- **Ownership:** Turned feedback from FIU Police Department trainers directly into architecture and scope decisions across three-week sprints, and wrote the process for redeploying the offline system at each demo site.

Data & Backend Engineering Intern **May 2024 – August 2024**

Elicrom Ltd. | Guayaquil, Ecuador

- **Data engineering:** Built ETL pipelines in Python, pandas, and SQL to migrate legacy Excel datasets into a production MySQL-based DBMS, part of a migration that cut delivery dispatch time from 7–10 business days to 4–7.
- **Systems design:** Independently built a fastest-route selection system for delivery dispatch, combining Google Maps API route data with live driver input submitted through the company's employee portal.
- **Testing & cloud:** Wrote SQL and Python regression tests covering every new component per team standard, and ran the company's website, DBMS, and underlying database on Google Cloud Platform.

Back-End Development Intern **May 2023 – August 2023**

Sistagrosa S.A. | Guayaquil, Ecuador

- **Backend optimization:** Refactored Spring Boot service layers to resolve database redundancy bugs, cutting API response times by 30% and speeding PostgreSQL queries on medical inventory records by 25%.
- **Systems integration:** Engineered a REST integration with a third-party shipping provider to replace manual phone-based coordination, saving 60–90 labor hours per week.

PROJECTS

IRS Tax Q&A, Retrieval-Augmented Generation Pipeline | *github.com/PinedaMiguel/IRS-Pub17* Sep 2026

- Built a question-answering service over 333 pages of IRS tax-year-2025 publications: PDF parsing, section-aware chunking into 1,508 chunks, embeddings stored in PostgreSQL with pgvector, and cross-encoder reranking, served through FastAPI with JWT roles and a per-request audit log, and shipped on Docker Compose with GitHub Actions CI gating retrieval recall against regressions.
- Raised top-1 retrieval accuracy from 51.7% to 90.0% and answer accuracy from 86.7% to 98.3% against a hand-verified 60-question set, measuring each change in isolation; all 14 unanswerable questions were declined rather than guessed.

Spring Boot Cassandra Product API | *github.com/PinedaMiguel/SpringBootCassandra*

- Built a RESTful product management service in Spring Boot 3.1.5 and Java 17 with a layered controller, service, and repository architecture, modeling the Cassandra schema and writing custom CQL queries through Spring Data Cassandra.

AI Student Attendance System | *github.com/PinedaMiguel/Student-Attendance-System* Feb 2025 – May 2025

- Built a webcam-based facial recognition attendance system in React that logs attendance once per student, per class, per day, keeping inference and all records local in IndexedDB so it runs fully offline.

TECHNICAL SKILLS

- **Languages:** Java, Python, JavaScript/TypeScript, C# (Unity), SQL, HTML/CSS
- **Backend & systems:** Spring Boot, FastAPI, RESTful APIs, JWT auth, WebRTC, WebSockets, ETL pipelines, Node.js, React
- **AI & machine learning:** Retrieval-augmented generation, embeddings, cross-encoder reranking, LLM and speech model fine-tuning, evaluation (recall@k, MRR, answer accuracy), Claude API
- **Databases:** PostgreSQL, pgvector, MySQL, Cassandra, IndexedDB
- **Cloud & tooling:** Google Cloud Platform, Docker and Docker Compose, GitHub Actions (CI/CD), Git, Agile/Scrum
- **Testing:** pytest, Unity Test Framework, integration and stress testing