

Oscar Manuel Arenas

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About

Computer Science graduate student with experience in software development and machine learning. I have a strong interest in turning manual processes into scalable workflows that connect datasets, AI models, and visualization tools. My experience spans building knowledge graphs to evaluate AI research at NNSA and conducting AI research at USC ICT, with a focus on reliability, documentation, and usability.

Education

M.S. in Computer Science, California State University, Long Beach
B.S. in Computer Science, California State University, Long Beach

Expected: May 2026
May 2024

Experience

Machine Learning Graduate Researcher
Data Semantics and Human Data Interaction (D²) Lab, CSULB

Long Beach, California
August 2025 – Present

- Conducting thesis research applying machine learning to classify pilot performance based on eye-gaze data
- Refactored BEACH-Gaze, an open-source Java based eye-tracking analytics tool, into a modern Python-based system (TIDE-Gaze) with improved modularity, maintainability, and integration for machine learning ready data generation
- Exploring both image-based and time-series classification methods to evaluate pilot task performance thresholds
- Configuring and training deep learning models in PyTorch and TensorFlow to predict whether a pilot's task performance meets or falls below standards

AI Research Intern
USC Institute for Creative Technologies

Los Angeles, California
May 2025 – August 2025

- Designed a workflow to analyze 3rd to 12th grade English science text datasets to evaluate ChatGPT-4o, Gemini, Cohere, and locally hosted Hugging Face models on Spanish translations performance using Spanish readability metrics
- Developed Python scripts to evaluate untargeted vs. grade-targeted Spanish translations, and implemented a Microsoft AutoGen multi-agent retry system that improved grade-level alignment accuracy by up to 40%
- Documented workflows and statistical analysis processes so researchers could trace, reproduce, and extend experiments

Data Science Intern
National Nuclear Security Administration

Remote
May 2024 – April 2025

- Interned at the NNSA Defense Nuclear Nonproliferation R&D office supporting the Data Science portfolio
- Created an ontology focused on Trustworthy, Effective, and Deployable AI (TED-AI) using Python to better characterize current focus areas, opportunities, and potential gaps for DNN R&D
- Developed a modular VS Code extension with drag-and-drop dataset uploads and D3.js visualizations, enabling non-technical users to explore ontology data
- Built an AI agent utilizing an AI ontology to evaluate research documents related to DNN R&D, leveraging Python LangChain libraries to assess ontology effectiveness

Personal Projects

AI-Agents Pong Game (Python, Typescript, Flask)

Mar-Apr 2024

- Built a VS Code WebView Pong game with both paddles autonomously controlled by AutoGen agents.
- Managed real-time canvas rendering and agent messaging; validated by Pydantic schemas
- Wrote Playwright tests for launch, gameplay, and scoring to ensure functionality.

Skills

Programming: Python | JavaScript | Java | R | SQL | Typescript
Libraries: TensorFlow | PyTorch | Pydantic | NumPy | Pandas

Coursework: Machine Learning | SWE | Algorithms
Tools: Git | Docker | Azure (AI Foundry) | Figma

Scholarships

- **James D. Woolever CIS Scholarship**, Cerritos College Foundation
- **Nega Family Scholarship for Students in Technology**, Cerritos College Foundation
- **STEAM Scholarship Award**, presented by Neudesic