Oscar Manuel Arenas

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About

Computer Science graduate student with experience in data science, software development and machine learning. I specialize in turning manual processes into scalable workflows that connect datasets, AI models, visualization tools, and more. My projects span using knowledge graphs to evaluate AI research at NNSA to AI workflow automation at USC ICT, with a focus on reliability, documentation, and usability.

Education

M.S. in Computer Science, California State University, Long Beach — Expected: May 2026
B.S. in Computer Science, California State University, Long Beach — May 2024

Experience

Machine Learning Graduate Researcher — *Long Beach, California*
Data Semantics and Human Data Interaction (D^2) Lab, CSULB — *August 2025 – Present*

- Conducting thesis research applying machine learning to classify pilot performance based on eye-gaze data
- 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 — *Los Angeles, California*
USC Institute for Creative Technologies — *May 2025 – August 2025*

- Designed a workflow to analyze 3rd to 12th grade English science text datasets to evaluate LLMs (ChatGPT-4o, Gemini, Cohere) Spanish translation performance using Spanish readability metric (Fernández-Huerta)
- Developed Python scripts to evaluate untargeted vs. grade-targeted Spanish translations, and implemented a Microsoft AutoGen retry AI agent that improved grade-level alignment accuracy by up to 15%
- Documented workflows and statistical analysis processes so researchers could trace, reproduce, and extend experiments

Data Science Intern — *Remote*
National Nuclear Security Administration — *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

KeyFlow: System-wide Hotkey Automation *(Python, Electron, Node.js)* — *2025*

- Built a desktop app that lets users define global hotkeys (e.g., `Shift + A + I`) to trigger background prompts anywhere on their computer
- Implemented system-wide keyboard hooks and a background daemon with a tray UI for creating "Trigger → Action" chains (select text → transform → paste back)
- Added modular action handlers (text formatting, AI-powered rewrites, script execution) with JSON-based configs for easy customization and reuse

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