

Oswaldo Orona

AI Engineering and Data Science | Database and Geospatial Systems

Denver, Colorado | [LinkedIn](#) | [GitHub](#) | [Portfolio](#)

Profile

Principal Database Administrator at IFS with a Master of Computer Science in Data Science from the University of Illinois Urbana-Champaign and database experience since 1998. Build AI applications independently alongside my current role, connecting retrieval, tool-using agents, and geospatial systems to inspectable data and evaluation. Combine graduate study in machine learning and data science with experience in production databases, migrations, recovery, and operational automation.

Education

University of Illinois Urbana-Champaign | Master of Computer Science in Data Science | 2020

Graduate foundation: machine learning, deep learning, natural language processing, computer vision, data mining, data cleaning, visualization, distributed systems, and cloud computing.

Instituto Politécnico Nacional | Bachelor of Science in Computer Science | 1998

Technical Skills

- **AI engineering:** retrieval-augmented generation (RAG), embeddings, hybrid search, MCP, tool calling, ReAct workflows, structured outputs, retrieval evaluation, Gemini integration.
- **Data science:** Python, R, SQL, model comparison, relevance metrics, text analysis, data preparation, visualization, geospatial analysis.
- **Data systems:** Oracle Database, Oracle E-Business Suite, PostgreSQL, pgvector, PostGIS, pgRouting, Oracle Spatial, ArcGIS Server, ArcSDE, FME.
- **Software and infrastructure:** FastAPI, Next.js, TypeScript, Java, PL/SQL, shell scripting, Git, Linux, Docker, Docker Compose, Proxmox, LXC, AWS migrations.

Selected AI Engineering Projects

Independent projects developed alongside my employment at IFS. Technical articles, demonstrations, and evidence are available at the linked pages.

JobMap | Search and evaluation

- Built a job-search application with relevance evidence and comparison views. Evaluated Jev and three local embedding models across 237 postings and 48 queries; distinguished graded ranking gains from strict requirement matching and measured latency.

Mexico City transit assistant | Gemini, MCP, PostGIS, pgRouting

- Connected a conversational assistant to place-resolution and routing tools. Routes are calculated in a stored transit graph, with a map and tool trace for inspection; documented dated coverage and routing assumptions.

Hermes homelab agent | Agent integration and infrastructure

- Configured Hermes Agent with a sandboxed runner, infrastructure API wrapper, and approval workflow. Recorded container provisioning and independent DNS, SSH, and Docker checks; documented remaining control gaps.

Masker | TypeScript, PostgreSQL, agent data boundaries

- Built a tool that masks selected customer fields before returning synthetic records to an agent, plus a PostgreSQL mailbox and loading workflow. Published code and captured checks, including the emulated consumer's limitations.

Professional Experience

IFS | Denver, Colorado

Principal Database Administrator | 2019-Present

- Lead database administration for 80+ Oracle and PostgreSQL production, QA, and development databases across 40+ servers; support hosted customers and development teams.
- Oversee Oracle E-Business Suite administration for eight hosted clients and internal environments, including cloning, patching, upgrades, and performance tuning.
- Lead database and operating-system migrations, including Oracle 12c to 19c and Linux 7 to 8; manage backup, recovery, disaster recovery planning, and monitoring.
- Develop PL/SQL and shell automation for database operations and reporting; guide developers on database features, query performance, and programming practices.

P2 Energy Solutions | Denver, Colorado

Senior Database Administrator | 2010-2019

- Administered 50+ production and 40+ QA/development Oracle and PostgreSQL databases supporting more than 500 users and hosted customers.
- Led Oracle E-Business Suite administration and database/application migrations to AWS; developed Oracle-to-PostgreSQL migration processes.
- Implemented RMAN backup and recovery, disaster recovery procedures, monitoring, and PL/SQL and shell automation; completed platform and operating-system migrations.

Tobin International | Denver, Colorado

GIS Database Developer | 2002-2010

- Administered Oracle databases and ESRI geodatabases for internal and hosted GIS services; designed replication and integration using Oracle Spatial, ArcSDE, FME, and PostgreSQL/PostGIS.
- Built spatial processing, geodatabase transaction management, ETL, and database automation with PL/SQL and shell scripts; delivered GIS hosting through ArcGIS Server.

IDT, an NIC Company

Database Developer | April 2001-October 2002

- Managed Oracle QA and development environments; wrote installation scripts and PL/SQL procedures, supported customer deployments, and upgraded databases from Oracle 8i to 9i.

Appteck

Database Developer and Team Lead | September 1999-April 2001

- Led GIS and database migration work, including a geodatabase and web CRM implementation for Pachuca, Hidalgo; migrated Microsoft Access applications to Oracle and Java.

Oracle Mexico | Mexico City, Mexico

Presales Consultant | June 1998-September 1999

- Built Oracle Database and Oracle Spatial demonstrations and proof-of-concept systems; provided technical sales support and presented solutions to customers.

Certifications and Training

Oracle Database SQL Certified Expert; Oracle Certified Associate. Additional training in Oracle Applications system administration, Oracle DBA administration, ArcSDE, and ArcGIS Server.