Erick E. Shepherd

Enterprise Software Engineer · Oracle Ecosystems · AI-Assisted Tooling

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SUMMARY

I build the enterprise software that quiet, load-bearing business processes run on. For nearly five years I led development of the Oracle APEX and PL/SQL applications behind a national supplemental-health-insurance underwriting pipeline, and along the way introduced the source control and automated testing the team had been working without and co-designed its first CI/CD pipeline.

Before enterprise software I was a researcher and intern at NASA Goddard, working on satellite aerosol remote sensing. Two of the tools I wrote there were filed as NASA New Technology Reports — a genuine machine-learning and scientific-computing background that predates the current AI wave rather than riding it.

Today I work fully remote across the Eastern US, bringing that span — from satellite data pipelines to production LLM-to-database integrations and self-hosted infrastructure — to Oracle, health-IT, and developer-tooling problems.

EXPERIENCE

Application Development Advisor · Cigna Supplemental Health Services (via Magnit Global) — Aug 2021 – May 2026

Lead and core developer on the Oracle APEX applications powering a national supplemental-health-insurance underwriting pipeline, from quoting through contract generation.

- Lead developer on the Field Quote Tool — the entry point of the underwriting pipeline used daily by sales, pricing, and underwriting teams — and core developer on Engage, the downstream contract-generation tool, across the full tenure.
- Introduced Git and GitHub to a team with no source control, establishing the branching, code-review, and commit standards adopted across the group, with admin over 29 repositories.
- Co-designed the team's first CI/CD pipeline and led the Oracle APEX deployment-workflow integration.
- Designed and built MAKESQL, a domain-specific language and Python package that compiles PL/SQL objects in correct dependency order across environments — replacing an error-prone manual process — plus a companion VS Code syntax-highlighting extension.
- Built a Python abstraction layer over the OracleDB environments that let Claude, via Cursor Composer, query enterprise databases through a locally-running credentialed utility — one of the team's first production AI integrations.
- Authored an OCR-backed ETL pipeline using pandas and pytesseract that migrated inconsistently structured Excel pricing data — including rate tables embedded as images — into Oracle on upload.
- Mapped dependencies across 15+ applications and hundreds of database objects with graphviz and networkx into architectural reference graphs delivered to leadership.
- Led a four-developer squad: task delegation, code review, and technical direction.

Freelance Systems Engineer · Independent — Jul 2020 – Jun 2025

Independent contract engineering spanning embedded/IoT devices and web and data systems.

- Designed and prototyped IoT security devices: embedded firmware in C and Python, custom PCB design, and sensor integration.
- Delivered smaller contracts across web development, data automation, and systems integration.

Radar Systems Engineering Intern · Northrop Grumman Mission Systems Jun 2020 – May 2021

Defense systems engineering on a cleared program (DoD Secret), performed fully remotely.

- Held an active DoD Secret clearance — obtained April 2020; lapsed 2021, eligible for reinstatement — on a cleared defense systems-engineering role performed fully remotely.
- Worked within large-scale defense systems-engineering processes, documentation standards, and cross-functional team workflows.

Sally Ride Intern — Dark Target Aerosol Group · NASA Goddard Space Flight Center Jun 2019 – Dec 2019

Streamlined ground-truth validation and eliminated a proprietary IDL dependency in NASA's MODIS Dark Target aerosol-retrieval pipeline; two tools filed as NASA New Technology Reports.

- Wrote a Python AERONET data-retrieval tool and a Python re-implementation of the IDL CONGRID interpolation routine — both filed as NASA New Technology Reports — eliminating a proprietary IDL licensing dependency from the Dark Target pipeline.
- Showed that near-real-time GFS forecast fields could substitute for older GDAS re-analyses in aerosol retrieval, enabling near-real-time processing; presented at the AGU Centennial Fall Meeting in 2019.
- Selected for the nationally competitive NASA Sally Ride Internship under the Science Mission Directorate.

Advanced Computing in Earth Sciences (ACES) Intern · NASA Goddard Space Flight Center Jun 2018 – Aug 2018

Studied poleward aerosol transport using space-based lidar from the International Space Station.

- Analyzed CATS and CALIPSO lidar backscatter and depolarization data to characterize poleward aerosol transport; presented at the GSFC summer intern poster session.
- Selected for the NASA ACES program — 20 students nationally — an intensive in HPC, scientific software engineering, and Earth-science data analysis.

Research Assistant · UMBC — Department of Physics, ACROS Group Aug 2017 – May 2020

Atmospheric remote-sensing research on UMBC's Taki supercomputer under an NSF CyberTraining grant.

- Implemented a K-Nearest-Neighbors algorithm to collocate MODIS satellite cloud observations with NOAA and NSIDC sea-ice measurements, investigating anomalous cloud-opacity discrepancies between MODIS and CALIOP.
- Ran analyses on the Taki HPC cluster (SLURM, GPU, InfiniBand) with NumPy, SciPy, scikit-learn, PySpark, and mpi4py; co-authored conference presentations at the MODIS/VIIRS Science Team Meeting and the International Radiation Symposium.

SKILLS

Oracle & Databases	Oracle APEX · PL/SQL · Oracle Database · SQL · Liquibase · Database design
Languages	Python · PL/SQL · JavaScript · C / C++ · Java · Fortran · Solidity · MATLAB · Bash · LaTeX
AI & Machine Learning	LLM-to-database integration · Claude / Cursor Composer · Custom GPT development · scikit-learn · K-Nearest-Neighbors · Monte Carlo methods · OpenCV · NLP

DevOps & Infrastructure	CI/CD · GitHub / GitHub Actions · Python packaging (PyPI) · Docker · Linux · GitLab · Self-hosted infrastructure · nginx · Email auth (SPF/DKIM/DMARC) · DNS / deliverability · Selenium / WebDriver
Data & Scientific Computing	NumPy · pandas · SciPy · Matplotlib · HDF4 / netCDF4 · PySpark · mpi4py · HPC / SLURM · ETL · OCR (pytesseract) · Geospatial (Cartopy, Folium)
Embedded & Hardware	Embedded C / Python firmware · PCB design · Sensor integration · Raspberry Pi · Arduino

EDUCATION

B.S. Physics — coursework completed, two courses remaining · University of Maryland, Baltimore County — 2017 – Present

Degree not yet conferred; completion in progress through the UMBC Finish Line Program.

A.S. in STEM — High Honors · Frederick Community College — 2011 – 2015

GPA 3.816. Martin Kalmar Award for Academic Excellence in Mathematics; Who's Who Among Students in American Colleges & Universities.

Advanced Computing for Earth Sciences (ACES) Program · University of Virginia / NASA — 2018 – 2018

Selective NASA-sponsored intensive in HPC, scientific software engineering, and Earth-science data analysis — 20 students nationally.

CERTIFICATIONS

Oracle APEX Cloud Developer — Oracle Certified Professional — Oracle University, Oct 2023 · ID 306102873APEX23OCP

The Complete PL/SQL Bootcamp — Udemy, Aug 2022

Complete Python Course — Udemy, Aug 2022

SELECTED PUBLICATIONS

1. Shepherd, E., et al. (Dec 2019). Assessing the Use of Forecast Meteorological Analyses to Support Aerosol Retrieval in Near Real-Time. AGU Centennial Fall Meeting, San Francisco, CA.
2. Zhang, Z., Shepherd, E., et al. (Nov 2019). Understanding the Quantitative Connection Between Cloud Opacity and Cloud Optical Thickness Using CALIOP and MODIS Observations. 2019 MODIS/VIIRS Science Team Meeting, College Park, MD.
3. Zhang, Z., Shepherd, E., & Wang, C. (Jun 2020). Investigation of Anomalous Transparent Clouds Based on MODIS and CALIPSO Observations. 2020 International Radiation Symposium, Thessaloniki, Greece (conference canceled, COVID-19).
4. Shepherd, E. & Levy, R. (Aug 2019). Streamlining Ground-Truth Validation and Algorithm Improvement for the Dark Target Aerosol Research Product. NASA GSFC Summer 2019 Intern Poster Session, Greenbelt, MD.