

Jose Escobar

Geospatial data engineer · environmental risk and decision support

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Based in Mexico, previously Australia · available for international remote work and relocation · Spanish (native), English (fluent)

I build **spatial ETL pipelines, PostGIS databases and deployed platforms** that turn satellite, LiDAR and sensor data into decisions people can act on. Four deployed systems and thirteen documented sprints, built independently on open public data, each published with its validation approach and its limitations. Industrial engineer by training, moved into software and data engineering through sustained independent work.

Selected systems

Structural Triage Engine

github.com/Goheist01/structural-triage-engine

Offline-first Python CLI turning a post-earthquake LiDAR point cloud into a ranked building inspection map and an optimised GPX field route – four geometric indicators per footprint, percentile-tiered, no ML or connectivity at runtime. Ran unchanged on Haiti 2010 (17.8M returns) and Kumamoto 2016 (8.1M): different countries, CRS and construction typologies. The ranking is a relative anomaly heuristic, not yet scored against engineer-assigned damage grades.

Hydrological Terrain Simulation Engine

github.com/Goheist01/hydro-sim-engine

Python CLI converting any US DEM into a flood screening product – animated simulation, PDF drainage report, GIS-ready basins, per-building exposure – via Green-Ampt infiltration on SSURGO soils, Muskingum-Cunge routing and HAND flood mapping. Diagnosed nondeterministic tie-breaking in WhiteboxTools terrain conditioning that shifted drainage divides between identical runs, replaced it with priority-flood filling in pysheds, and added a byte-identical reproducibility gate.

Amazon Deforestation Intelligence Platform

live · Supabase-backed

Live Leaflet map on a Supabase-hosted PostGIS database, joining 1,121 Hansen GFC forest-loss detections across four Brazilian states to 370 WDPa boundaries. 66 potential protected-area overlaps identified via ST_Within, each traceable to its public source – a lead for investigation, not evidence of illegality.

Mekong Delta Agricultural Intelligence Platform

live · tiled Sentinel-2

Parcel-queryable interface over 15 delta provinces: five Sentinel-2 SR composites converted to COG and served as 23,245 XYZ tiles for instant band switching, with PostGIS on Supabase behind Leaflet and Chart.js. Imagery real; parcel layer and spectral series synthetic, as no public cadastre exists – an architecture demonstration, not a measurement system.

Technical skills

Spatial data engineering	Python · GeoPandas · Shapely · pyproj · pandas · NumPy · SciPy · spatial ETL · CRS handling
Earth observation	Google Earth Engine · Sentinel-2 · MODIS · Hansen GFC · WDPa · Planetary Computer · STAC · stackstac
Databases & APIs	PostgreSQL · PostGIS · GIST indexing · ST_Within / ST_Intersects · Supabase · REST · SQLAlchemy
Raster, LiDAR & terrain	rasterio · laspy · pysheds · WhiteboxTools · GDAL · COG · XYZ tiles · DTM/DSM · D8 routing · HAND
Deployment & ML	Git · GitHub Actions · Docker · AWS S3 · Leaflet.js · Chart.js · determinism testing · PyTorch · YOLOv8 · scikit-learn · OpenCV

Experience

2026 – present	Geospatial data engineering — independent portfolio Self-directed · remote Thirteen documented sprints across environmental monitoring, satellite imagery, spatial databases, hydrological simulation, LiDAR terrain analysis and computer vision. Four deployed platforms, two open-source engines, every result publicly verifiable against its source data.
2026 – present	Freelance web developer Independent · remote Production websites and brand identity for paid clients in Greece and Canada, end to end.
2024 – 2026	Front of house and customer service Niko's Quality Cakes · Melbourne, Australia High-volume order lifecycle under deadline; closed workflow gaps between intake and production, and implemented inventory tracking to hold stock accuracy.
2021 – 2022	Sales, operations and logistics La Italiana · Matrix Fitness · México Client pipelines end to end, multi-location delivery coordination, and reporting that improved stock visibility.

Education

Degrees	B.Eng. Industrial Engineering , TecNM – ITS Poza Rica, México (2022) · Diploma of Information Technology , Laneway Education, Melbourne (2026)
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Method, validation and limitations for each system: research notes PDF at the portfolio link. All code MIT-licensed; all datasets public.