

Emad Ghaleh Noei, Ph.D.

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Summary

Senior ML and AI engineer with 7+ years building production AI systems, geospatial data pipelines, and spatial analytics workflows for imagery, LiDAR, and 3D data. Experience shipping computer vision pipelines, agentic AI evaluation/reporting workflows, backend Python services, and cloud-based geospatial processing using Python, TensorFlow, PyTorch-based tools, FastAPI, Docker, and Google Cloud.

Experience

Spatial Data Analytics Inc. | Innovation Developer | Calgary, AB | May 2022 - Present

- Built production ML pipelines for image segmentation, object detection, and LiDAR / point-cloud workflows on large geospatial datasets.
- Designed a Claude-based agentic workflow for multi-step model evaluation, expert-QC comparison, discrepancy flagging, and automated PDF reporting.
- Implemented GeoPandas, Shapely, KD-tree, Hungarian matching, and IoU-based scoring to benchmark AI outputs against ground truth.
- Built scalable LiDAR pipelines with PDAL, laspy, STRtree indexing, and multiprocessing for large LAS/LAZ datasets.

Flyover Map 3D | Founder & Developer | Calgary, AB | 2024 - Present

- Building a live geospatial platform that generates 3D interactive maps and flyover visualizations from user-defined routes.
- Designed cloud backend workflows on Cloud Run, GCS, Firestore, FastAPI, and Docker for job orchestration, delivery, and monitoring.
- Implemented DEM/RGB preprocessing, reprojection, mesh generation, caching, and rendering pipelines for large geospatial datasets.

University of Calgary | Applied Research Scientist | Calgary, AB | Feb 2022 - Jan 2023

- Focused on applied geospatial and geophysical modeling.
- Built data-driven subsurface models combining machine learning, Bayesian inference, and deterministic approaches.
- Led Python-based geophysical analysis and uncertainty-aware interpretation workflows supporting geothermal target discovery.

University of Calgary | Geospatial Developer | Calgary, AB | Sep 2017 - Dec 2021

- Developed Bayesian and machine-learning workflows for inverse problems, anomaly detection, uncertainty estimation, and spatial-data analysis.
- Built geospatial and geophysical Python pipelines for subsurface modeling and interpretation.
- Delivered 3D subsurface earth models for external clients, including Abu Dhabi National Oil Company (ADNOC).

Technical Skills

Languages: Python, C++, Cython, Julia, R

ML / AI: TensorFlow, Keras, PyTorch, Detectron2, Scikit-learn, computer vision, segmentation, object detection, agentic AI, LLM orchestration

Cloud / Backend: FastAPI, Docker, Google Cloud, Cloud Run, GCS, Firestore, AWS

Geospatial / 3D: LiDAR, point clouds, PDAL, laspy, GeoPandas, Shapely, Rasterio, KD-tree, STRtree, DEM processing, mesh generation

Education

University of Calgary - Ph.D., Geomatics Engineering, 2017 - 2021

University of Tehran - M.S., Geospatial Engineering, 2012 - 2014