Emad Ghaleh Noei, Ph.D.

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Summary

Lead Geospatial AI Engineer with 7+ years building production AI systems, computer vision pipelines, geospatial data pipelines, and spatial analytics workflows for imagery, LiDAR, and 3D data. Experience spans computer vision, agentic AI evaluation and 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. | Lead Geospatial AI Engineer | Calgary, AB | Jul 2026 - Present

- Lead scalable geospatial AI, computer vision, and GIS solution development across LiDAR, imagery, 3D vector data, automation, and cloud-based processing workflows.
- Coordinate engineering, R&D, and software development efforts to translate project scope, quality requirements, and timelines into repeatable delivery plans.
- Define AI automation workflows, technical documentation, and data-processing standards that improve consistency, transparency, and team enablement.

Spatial Data Analytics Inc. | Innovation Developer | Calgary, AB | May 2022 - Jun 2026

- 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.

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.

Flyover Map 3D | Lead Innovation Developer | Calgary, AB | Sep 2020 - Feb 2022

- Built a geospatial platform that generated 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 | 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