Gordon Logie

Geospatial Data Scientist · Remote Sensing Specialist
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SUMMARY

Geospatial data scientist and remote sensing specialist with over ten years of industry experience, from field campaigns and imagery analytics in precision agriculture to machine learning for clients across insurance, energy, agriculture and environmental monitoring. I take projects end to end: framing the problem with clients, combining satellite, aerial, field and signals data into workflows that answer it, and delivering documented code and clear results. I'm most motivated by work where open, scalable earth observation tools help solve real-world problems.

EXPERIENCE

Owner, GL Spatial — Alberta, Canada · Mar 2021 – present

- Independent remote sensing and geospatial consulting, delivering custom machine learning workflows with documented code and sample datasets.
- Recent work in satellite thermal anomaly detection for geothermal areas; earlier work in deep learning infrastructure detection and hyperspectral proofs of concept (see Selected projects).

Senior Data Scientist, Sparkgeo — Prince George, BC (Remote) · Jul 2021 – Aug 2026

- Ran data science projects end to end, from client discovery calls through to delivered proofs of concept, across optical, SAR and hyperspectral imagery, mobility data and other signals data.
- Mentored junior data scientists and interns, and advised company leadership.

Farmers Edge — Lethbridge, AB · Jul 2016 – Jul 2021

Remote Sensing Manager — Feb 2020 – Jul 2021

- Led planning and development of imagery analytics for the company's SaaS precision agriculture platform.
- Managed and mentored a team of remote sensing scientists (hiring, training, performance reviews), working with development teams in an agile environment.

Remote Sensing Scientist → Senior Remote Sensing Scientist — Jul 2016 – Feb 2020 (promoted Jul 2018)

- Led development of agricultural imagery analytics, including an automated crop health change alerting system and its hail damage extension.
- Led field research campaigns for model calibration and validation, from planning and staffing through to data processing.

Casual Instructor, Precision Agriculture, Lethbridge College — Lethbridge, AB · Aug – Dec 2019

- Developed and taught lectures, GIS labs, and assessments for a class of 38 students.

Earlier roles

- **Geospatial Analyst**, Integrated Sustainability Consultants, Calgary (2015). UAV photogrammetry, GIS mapping and Python image processing for oil and gas water management projects.
- **Research Assistant**, Alberta Terrestrial Imaging Centre, Lethbridge (2013). Field spectroscopy, crop measurements and UAV imaging for a food security project.
- **Hyperspectral Research Assistant**, Canada Centre for Mapping and Earth Observation, Ottawa (2012). Hyperspectral image pre-processing and lab spectroscopy for mineral detection, mine reclamation and oil sands projects.
- **Remote Sensing Technician**, Alberta Terrestrial Imaging Centre, Lethbridge (2011). Wetland mapping from satellite imagery, land cover classification and field data collection.

SELECTED PROJECTS

GL SPATIAL

- **Satellite thermal anomaly detection for geothermal areas** (2026). Multi-sensor workflow using MODIS, Landsat and Sentinel thermal data to detect and catalogue surface thermal anomalies, including day/night time series analysis and land surface emissivity correction.
- **Electrical substation detection** (2023). Deep learning detection of electrical substations in satellite imagery using DeepLabV3+ semantic segmentation.
- **Hyperspectral proofs of concept** (2021). Crop and vegetation classification, burn scar mapping, urban tree species mapping, shoreline oil spill monitoring and roof material classification.

SPARKGEO

- **Arctic sea ice mapping with geospatial foundation models** (2026). Mapped sea ice concentration from Sentinel-1 SAR using vision transformer (ViT) foundation-model embeddings with decision-tree models.
- **Mobility dataset quality assessment** (2026). Automated assessment of vendor mobility datasets for completeness, coverage, duplication and representativeness, with auto-generated reports. Built on Snowflake and GeoParquet.

- **Place-of-interest status modelling** (2025 – 2026). Models predicting POI status from third-party signals data, with reporting automated in scheduled Apache Airflow pipelines using Spark and Iceberg.
- **Home addition detection** (2025). Mask R-CNN detection and segmentation of residential additions in high-resolution aerial imagery for insurance use.
- **Property natural hazard risk** (2023 – 2025). Multi-hazard risk workflows and property risk reports for commercial and residential properties across the US.
- **Agricultural metrics for carbon credits** (2024). Cloud-based workflows estimating field metrics from multi-temporal optical imagery and interferometric SAR.
- **Cross-border trade monitoring** (2023). YOLO object detection to count vehicle activity at border crossings in high-frequency optical satellite imagery.
- **Wildfire and flood mapping** (2022). Automated burn scar mapping linking severe fires to flood risk, published as an interactive story map and presented at FOSS4G 2022 and CSRS 2022.

FARMERS EDGE

- **Crop health change alerting and hail damage detection** (2018 – 2020). Automated alerting system based on high-frequency satellite imagery, extended to detect hail damage, with field campaigns for calibration and validation.

EDUCATION

M.Sc., Geography, University of Lethbridge · 2013 – 2016 · GPA 4.0
Thesis: *The impact of spatial resolution on riparian leaf area index modelling using remote sensing*.

B.Sc., Geography (GIS concentration), University of Lethbridge · 2009 – 2013 · GPA 3.98
Graduated with Great Distinction.

PUBLICATIONS

- **Logie, G. S. J.**, & Coburn, C. A. (2018). An investigation of the spectral and radiometric characteristics of low-cost digital cameras for use in UAV remote sensing. *International Journal of Remote Sensing*, 39(15–16), 4891–4909. doi:10.1080/01431161.2018.1488297
- Coburn, C. A., Smith, A. M., **Logie, G. S.**, & Kennedy, P. (2018). Radiometric and spectral comparison of inexpensive camera systems used for remote sensing. *International Journal of Remote Sensing*, 39(15–16), 4869–4890. doi:10.1080/01431161.2018.1466085
- Coburn, C. A., & **Logie, G. S. J.** (2017). Temporal dynamics of sand dune bidirectional reflectance characteristics for absolute radiometric calibration of optical remote sensing data. *Journal of Applied Remote Sensing*, 12(1), 012006. doi:10.1117/1.JRS.12.012006
- Flanagan, L. B., Orchard, T. E., **Logie, G. S. J.**, Coburn, C. A., & Rood, S. B. (2017). Water use in a riparian cottonwood ecosystem: Eddy covariance measurements and scaling along a river corridor. *Agricultural and Forest Meteorology*, 232, 332–348. doi:10.1016/j.agrformet.2016.08.024

CONFERENCE PRESENTATIONS

- **Logie, G.** (2025). *Monitoring water levels in Canadian lakes and reservoirs using the Surface Water and Ocean Topography (SWOT) mission* [Poster]. Canadian Symposium on Remote Sensing (CSRS) 2025. Poster PDF
- **Logie, G.** (2022). *Mapping fire burn severity and extent in British Columbia watersheds* [Presentation]. Canadian Symposium on Remote Sensing (CSRS) 2022. Project page
- **Logie, G.** (2022). *A tool for mapping fire burn severity and extent in watersheds for flood risk assessment* [Presentation]. FOSS4G 2022, Florence, Italy. Talk page · Project page

SKILLS

- **Languages:** Python, SQL; familiarity with JavaScript, R, MATLAB, IDL.
- **Machine learning:** PyTorch, PyTorch Lightning, TensorFlow/Keras, scikit-learn, XGBoost, Hugging Face Transformers, Ultralytics (YOLO). Object detection, semantic segmentation, vision transformers, geospatial foundation models and embeddings.
- **Geospatial:** GDAL, Rasterio, GeoPandas, Shapely, H3, TorchGeo, Xarray; COG, Zarr, GeoParquet, STAC; QGIS, ArcGIS Pro, Google Earth Engine, Microsoft Planetary Computer, ENVI, ESA SNAP.
- **Data and cloud:** pandas, Polars, DuckDB, PostgreSQL/PostGIS, Snowflake, Apache Spark, Apache Iceberg, Apache Airflow, AWS (S3, Batch, Lambda, SageMaker), Databricks, Docker, MLflow.
- **Visualization and reporting:** Matplotlib, Seaborn, Plotly, Quarto.
- **AI-assisted development:** Claude Code, GitHub Copilot, Gemini; local open-weight models (Llama, Qwen).
- **Remote sensing:** multispectral, hyperspectral, thermal, SAR and lidar data from satellite, airborne and UAV platforms; atmospheric correction, sensor calibration, time series analysis, spectral unmixing.
- **Field:** campaign design and coordination, field spectroscopy, RTK GPS surveying, crop biophysical measurements.