Abdullah Al Faisal

Geospatial Data Scientist | Applied AI for Environmental, Energy, and Infrastructure Systems

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PROFESSIONAL SUMMARY

Geospatial Data Scientist and Environmental Systems Analyst with over 7 years of experience applying geographic information system (GIS), remote sensing (RS), Python, and machine learning (ML) to climate, energy, and infrastructure challenges. Proven ability to design AI-enabled spatial models, develop reproducible data pipelines, and deliver decision-ready analytics for government agencies, humanitarian organizations, and international partners. Experienced in leading geospatial systems, training teams, and translating complex datasets into actionable insights for policy, planning, and operational use.

CORE COMPETENCIES

Applied Machine Learning	Climate and Environmental Risk Analysis
Predictive Modeling and Forecasting	Spatial Statistics and Data Integration
Geospatial AI and Spatial Analytics	Model Validation and Reproducibility
Python Data Science	Decision Support and Reporting
Energy and Material Flow Modeling	Stakeholder Coord. & Capacity Building

PROFESSIONAL EXPERIENCE (GitHub: https://github.com/A2Faisal)

Geospatial Data Scientist & Teaching Assistant   *(September 2022 – Present)*

Department of Earth and Planetary Sciences, McGill University

Integrated Earth System Dynamics Lab, McGill University and ICTA UAB.

- Designed AI-enabled spatial models for forecasting and gap-filling in global energy and material flow datasets, improving data completeness by over 30 percent.
- Built an open-source Python package to generate and manage spatiotemporal datasets across 250+ human and Earth system variables at grid-level resolution for 220+ countries, integrating satellite imagery, census, and socioeconomic data to enable large-scale environmental, climate, and human-Earth system analysis.
- Developed gravity-based and network models linking resource extraction to end-use sectors for energy and material systems.
- Applied ML gap filling and predicted modeling using with cross-validation and error metrics.
- Mentored and trained 120+ students and collaborators in quantitative analysis, environmental systems, and climate hazards while delivering reproducible analytical pipelines used by international applied research teams.

GIS Specialist   *(July 2020 – August 2021)*

GIS Centre, Médecins Sans Frontières (MSF)/Doctors Without Borders

- Led mission-level GIS systems as the technical focal point, supporting humanitarian medical response across water and sanitation, logistics, security, outreach, and coordination functions in Rohingya refugee camps.
- Coordinated, trained, and supervised GIS, WatSan & outreach field teams, including leading of a 20+ member refugee data collection team, enabling camp-level infrastructure and health data capture.
- Designed and deployed geospatial data collection systems through operational dashboards using Kobo Toolbox, ArcGIS Survey123, Collector, Enterprise, and AGOL.
- Managed and analyzed geospatial data for water networks, operation & maintenance, fecal sludge management, and hygiene promotion, producing decision-ready maps and analyses.

- Coordinated geospatial activities with local authorities and international partners including UNICEF, IOM, UNHCR, and NGOs.

Research Consultant   *(May 2019 – July 2020)*

Climate Change and Disaster Management & RS Division (Ministry of Water Resources)

Center for Environmental and Geographic Information and Services (CEGIS)

- Managed GIS and remote sensing activities across 10+ national and international climate change (CC) and water management projects, including but not limited to: CC forecasting & participatory scenario development, sea level rise in coastal region, CC risk assessment in roads and low-lying flood potential region, preparation of storm water management plan for Thimphu, Bhutan, among others.
- Developed watershed and urban drainage models using ArcSWAT, ArcHydro, and SWMM, including DEM-based drainage connectivity, catchment delineation, slope, elevation, and discharge analysis.
- Conducted flood risk, inundation, storm water management, and road vulnerability analyses, including coastal crop damage assessment.
- Performed land use and land cover classification, impervious surface estimation, and DEM analysis from satellite imagery.
- Applied multi-criteria analysis to identify critical drainage zones and priority infrastructure interventions.
- Led field surveys, data verification, cadastral map digitization, and spatial data integration, coordinating with national and international government agencies.
- Prepared technical reports, maps, and presentations, revising deliverables based on client and stakeholder feedback.

TECHNICAL SKILLS

- Programming: Python, R, Google Earth Engine (JavaScript), ENVI IDL
- AI / ML & Modeling: machine learning, deep learning, predictive modeling, regression and tree-based models, neural networks, network and gravity models, material and energy flow models, statistical modeling
- Geospatial AI & Analysis: GeoAI, geospatial big data, spatial feature engineering, DEM analysis, land use and land cover classification, LiDAR, photogrammetry, UAV, Web GIS
- GIS Platforms: ArcGIS Pro, ArcGIS Enterprise, ArcGIS Online (AGOL), QGIS, ERDAS Imagine, ENVI, SNAP
- Libraries & Tools: GeoPandas, pandas, NumPy, xarray, rasterio, GDAL, arcpy, scikit-learn, TensorFlow, PyTorch, PyCaret, networkx
- Field & Surveys: Survey123, Kobo Toolbox, ArcGIS Collector

EDUCATION

PhD in Earth and Planetary Sciences (expected by August 2026), McGill University, Canada

MSc in Applied GIS and Remote Sensing, University of Southampton, United Kingdom

Bachelor of Urban & Regional Planning, Rajshahi University of Engineering & Technology, BD

HONORS, AWARDS AND IMPACT

- Vanier Canada Graduate Scholarship by NSERC; Commonwealth Shared Scholarship (UK); UN SDSN Local Pathways Fellow (2020).
- Competitive fellowships and research awards totaling CAD 235,000+; Research outputs cited 2,500+ times across academic and applied domains.

WORK AUTHORIZATION

- Authorized to work in Canada, Available for full time, contract, and consulting roles.
- Class 5 Driving License