M. Daud Tasleem

Research Engineer | Urban Risk Modelling and Spatial Analysis
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EDUCATIONAL BACKGROUND

Master in **Infrastructure and Structural Engineering** (Polytechnic University of Turin, Italy) Grade: 94%	*Feb 2023*
Bachelor of Civil Engineering (NUST, Pakistan)	*Aug 2020*

RELEVANT EXPERIENCES

GIS Prioritisation of NbS for Flood-Prone Historic Urban Cores — *Mar 24 – Mar 25*

InfraBIM Lab, Politecnico di Torino (Italy)

- *Mapped 128 NbS priority sites across two historic municipalities via GIS-based MCDA.*
- *Applied AHP to weight flood, heritage, and green connectivity for NbS site selection.*
- *Validated priority surface against 47 flood events; achieved Cohen's kappa of 0.71.*
- *Deployed WebGIS outputs into one municipality's 2025-2030 climate adaptation plan.*

Digital Twin for Climate-Resilient Historic Street Networks — *Sept 24 – Sept 25*

InfraBIM Lab, Politecnico di Torino (Italy)

- *Modelled 22 ha of historic Turin in CityGML 3.0; schema validated for Dutch city contexts.*
- *Trained U-Net on 2 cm UAV imagery for historic street surface classification; 0.87 IoU.*
- *Modelled 15 adaptation scenarios (UMEP/SOLWEIG); reduced peak MRT by 4.1 degC (22 ha).*
- *Published WebGIS for planners to compare thermal comfort scenarios at street level.*

Climate Risk Zones and NbS Decision Support (TERIMAAS) — *Sept 23 – Aug 24*

MANAGE 5.0 Funded | InfraBIM Lab, Politecnico di Torino

- *Built climate risk zones for 5+ communities; deployed WebGIS DSS for NbS evaluation.*
- *Simulated flood and heat risk with real-time IoT; quantified urban resilience metrics.*
- *Automated cross-scale spatial data pipelines; improved consistency 40% (PostGIS, FME).*

Urban Vegetation Dynamics and Greening Potential Analysis — *Mar 23 – Jul 23*

Research Project | InfraBIM Lab & DIATI, Politecnico di Torino

- *Analysed 10-year Sentinel-2 NDVI to map greening-browning trends across Turin (GEE).*
- *Quantified green-blue infrastructure cooling effects via NDVI-LST correlation (GEE).*
- *Identified 35+ urban regreening zones via spatially explicit vegetation-heat modelling.*
- *Built automated GEE pipeline (400+ scenes); exported to QGIS dashboards (Leafmap).*

Urban Climate Modelling and NbS Site Identification (DigiSky) — *May 22 – Sept 22*

Master's Thesis + Industry | DigiSky Italy + Polytechnic University of Turin

- *Modelled urban heat vulnerability across Turin; identified 1,200+ NbS candidate sites.*
- *Modelled green-blue infrastructure cooling effects; developed spatial risk toolkit.*
- *Applied DeepLabv3 (DSM+RGB fusion) for urban vegetation classification; 92% accuracy.*

Real-Time WebGIS for Urban Flood Risk and Resilience — *Oct 23 – Current*

MANAGE 5.0 Funded | InfraBIM Lab, Politecnico di Torino

- *Developing near real-time WebGIS platform for urban flood monitoring (IoT integration).*
- *Applied hydraulic modelling and vulnerability assessment for climate-adaptive DSS.*
- *Designed user-centric WebGIS interface with scenario-based flood risk visualisations.*

SCIENTIFIC CONTRIBUTIONS

Publications:

Daud, M., Ugliotti, F.M. (2026). *Rethinking Education on Critical Infrastructure Resilience and Risk Management.* Sustainability.	*Sustainability*
Daud, M. et al. (2025). *Spatial Insights for Building Resilience: The TERIMAAS Framework.* Smart Cities.	*Smart Cities*
Dabove, P., **Daud**, M. (2024). *Revolutionizing urban mapping: deep learning for building footprint segmentation.* Scientific Reports.	*SR Nature*
Ugliotti et al. (2023). *Enhancing Risk Analysis toward a Landscape Digital Twin Framework.* Sustainability, 15.	*Sustainability*

Daud et al. (2024). *Comprehensive Analysis of Web-GIS for Natural Hazard Management*. Sustainability, 16. — *Sustainability*

Conferences:

Daud, M. Spatial Insights for Resilience: GIS, BIM, and Digital Twin in Multi-Hazard Assessment. ICONREM 2024. — *ICONREM 2024*

Daud, M. Open-Source ML for Urban Feature Extraction. GeodaysIT, Bari, Italy. — *GeoDaysIT 2023*

SKILLS & EXPERTISE

ArcGIS Pro, QGIS, PostGIS, Google Earth Engine, FME, GeoServer, Cesium, GeoDjango, OGC, CityGML	*Geospatial*
Python, GDAL, GeoPandas, PySpark, API Integration, Git, GRASS GIS, Leafmap, Mapbox, AWS (S3, Lambda)	*Programming*
TensorFlow, DeepLabv3, U-Net, CNN, Reinforcement Learning (Actor-Critic), Monte Carlo, Random Forest	*AI & Modelling*
HEC-RAS, SWMM, Delft3D, GTFS Routing, OD Matrices, QNEAT3, ANSYS, PaLATE, LCA	*Infrastructure*
REST APIs, IoT Integration, ArcGIS Dashboards, Power BI, Real-Time Monitoring, WebGIS DSS	*Monitoring & DSS*
English (Fluent) | Urdu / Hindi (Native) | Italian (Intermediate B2)	*Languages*

ADDITIONAL PROJECTS

Urban Heat Island Mitigation and Green Infrastructure Planning, Turin

- *Identified 50 critical UHI hotspots using Landsat thermal imaging; proposed green-blue interventions.*
- *Developed mitigation strategies for green corridors and water features aligned with Torino 2030 goals.*

Adaptive Reuse: Fiat Factory for Sustainable Heritage Preservation

- *Built 6D BIM model integrating sustainability and conservation metrics; evaluated renewable energy options.*

High-Resolution 3D Mapping and Bridge BIM Interoperability

- *Generated cm-precision LiDAR 3D city models; reduced BIM editing time 40% via Dynamo automation.*

HONOURABLE MENTIONS

Geospatial Research for Indigenous Land Claims, Canada (R4D) — *Sept 22 – Sept 24*

Resources for Development Consulting | Ottawa, Ontario, Canada (Hybrid)

- *Digitized cadastral data supporting $6B in land claims; deployed COGeoTIFF workflows for 4TB+ data.*
- *Built GHG-integrated spatial optimisation models; reduced project costs by 15% (PostGIS, Mapbox JS).*

Final Year Project: Seismic Retrofitting (Gold Medallist)

- *Applied FRP retrofitting increasing seismic resilience by 65%; modelled load response (ETABS).*

CERTIFICATIONS

Satellite RS: Urban Heat Islands and Heat Vulnerability Index	*NASA ARSET*
Google Earth Engine for Land Monitoring Applications	*NASA ARSET*
Geospatial Data Science: Python, GeoPandas, PostGIS, QGIS Plugin Dev	*Udemy*
Deep Learning for Earth Observation | ML in GIS: LULC Analysis	*Udemy*
Spatial Databases with PostGIS and QGIS 3	*Udemy*
ArcPy for Python Developers using ArcGIS Pro	*Udemy*
Excel Essential Training (Office 365)	*LinkedIn*

EXTRA-CURRICULAR ACTIVITIES

Volunteer Geospatial Consultant, Blueberry River First Nations, Canada — *Nov 23 – Jul 25*

Land, Resource, and Cumulative Effects Analysis | Northeast British Columbia (Unpaid)

- *Applied NDVI time-series and archival satellite imagery to track historical vegetation and land-cover change across NE BC.*
- *Mapped industrial footprint, land disturbance, and cumulative development patterns in a forested landscape.*
- *Integrated road-network, distance-decay, and vegetation analyses into a spatial evidence base for land stewardship.*
- *Combined spatial and socio-economic indicators into a decision-support framework for territorial analysis.*

GIS Workshop Organiser – Punjab College Chakwal & MCE Risalpur — *2023 – 2024*

Pakistan | 5-day workshop (Chakwal, Summer 2023) + 3-day workshop (Risalpur, 2024)

- *Designed and delivered introductory GIS sessions for students and professionals with no prior GIS background.*
- *Covered coordinate systems, map reading, spatial interpretation, and practical QGIS workflows.*

REFERENCES	
Professor Anna Osello – anna.osello@polito.it	*DISEG POLITO*
Professor Francesca M. Ugliotti – francesca.ugliotti@polito.it	*DISEG POLITO*