ANUJ PATIL

GIS Data Scientist — Transit Analytics & Geospatial Engineering
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Professional Summary

GIS Data Scientist applying data analysis to improve countywide transit performance. Build cost-efficient **AWS** pipelines for **GTFS** (static/real-time/flex) and deliver planning apps in **ArcGIS Pro/Online**, **Experience Builder**, and **QGIS**. Strengths: **Python** geospatial (GeoPandas, GDAL, H3) and KPI design (ridership, on-time performance, demand, access/equity). Co-developed **microtransit** and shipped **LLM** assistants for fixed-route operations.

Experience

GIS Data Scientist
Dec 2023 – Present

Volunteer Transportation Center (VTC) — Serving St.Lawrence and Jefferson County Public Transit, NY
Own the geospatial/data backbone – turn rider needs and ops constraints into GTFS, analytics, and tools used by planners, dispatchers, and the public.

- **Unified service design across modes.** Aligned **fixed-route**, **FMLM**, and **zone-based microtransit** using demand, travel-time, and OTP analysis—simpler transfers, wider coverage, better on-time connections.
- **Trusted, reusable data.** Unified **GTFS static/RT/Flex** with automated QA; standardized KPIs (ridership, OTP, coverage) and published internal/public maps in **Experience Builder**.
- **Low-cost real-time pipeline.** Deployed **Lambda+S3** GTFS-RT ($4/month approx.) with 30-day history for service and OTP analysis.
- **Operations copilot.** Co-developed microtransit zones/windows and shipped **LLM** assistants for fixed-route ops (headways, detours, rider Q&A).
- **Faster publishing.** Built a multi-channel workflow (vendor/GTFS, web, maps, print) to cut revision loops and errors.

GIS Intern
Jul 2023 – Dec 2023

Clarkson University CEM Consulting Group (C3G), Potsdam, NY

- Delivered GIS for **Complete Streets** and urban planning; updated municipal geodatabases and parcel/transport layers for decision-makers.
- Supported **A2A Wildlife Connectivity and Roadkill Study**: spatial joins, hotspot modeling, and mitigation mapping; produced stakeholder-ready StoryMaps.
- Built and maintained **ArcGIS Online** web apps and data products for public engagement.

Research Assistant
Mar 2023 – Aug 2023

Vestibular Lab, Clarkson University (Lewis School of Health Sciences)

- Streamlined VR/EMG data collection workflows to improve trial throughput by **20% (approx.)** while maintaining quality controls.
- Developed R/Python/MATLAB models (incl. CNN/RNN baselines) for incident detection; improved classification **accuracy by 25% (approx.)** vs. prior baselines.

Graduate Assistant
Dec 2022 – Apr 2023

Clarkson University, Potsdam, NY

- Analyzed **10M+** environmental audit records across US/EU/CA/IN for carbon policy insights; built Random Forest predictors for emissions risk.

System Administrator & Data Analyst
Jul 2019 – Aug 2020

Delonix Society's Baramati College of Pharmacy, Maharashtra, India

- Designed a smart student card platform (PostgreSQL/MySQL) improving attendance tracking by **30% (approx.)**; delivered dashboards (Highcharts) and admin tools.

Selected Projects

A2A Corridor Roadkill Analysis
Apr 2024

- *Goal:* Identify wildlife–vehicle collision hotspots and prioritize mitigation sites along the Adirondack to

Algonquin (A2A) corridor.

- *Data/Methods:* Joined **1,000+** collision records with traffic volume, speed limits, land cover, water proximity, and slope; ran kernel-density screening followed by **penalized regression** to rank predictors and produce stable hotspot polygons.
- *Outputs:* Planner-ready **mitigation layers** (priority segments, fencing/signage candidates, crossing points) and a public *StoryMap* for engagement.
- *Stack:* ArcGIS Pro/Online, GeoPandas, scikit-learn.

NY Road Network Safety Analysis   Apr 2023
- *Goal:* Build an analysis-ready network to surface roadway segments with elevated risk.
- *Data/Methods:* Unified crashes, traffic counts, shoulder width, noise, temperature, and weather into a single geodatabase; computed segment-level features and a **composite risk score** to **prioritize the top 5%** of segments for intervention.
- *Outputs:* Ranked segment list with map bookmarks and exportable layers for engineering review.
- *Stack:* ArcGIS Pro, Python, PostgreSQL.

Hotel Booking Cancellation Prediction   Jul 2023
- *Goal:* Predict cancellations early to reduce revenue leakage and overbooking.
- *Modeling:* **CatBoost** with cross-validated hyperparameter search achieved **88.3% accuracy**; used feature importance/partial dependence to explain impact of lead time, ADR, and past cancellations.
- *Outputs:* Scoring notebook and simple thresholding rule for early-warning flagging.

Cyberbullying Detection (NLP)   Jun 2022
- *Goal:* Classify toxic content at scale while balancing precision/recall across classes.
- *Approach:* Preprocessed **1M** tweets; trained classical NLP baselines (TF–IDF + linear models) and a lightweight deep-learning variant; handled class imbalance and produced confusion-matrix driven error analysis.
- *Repo:* github.com/anujpatil610/cyberbullying-detection.

Technical Skills

Languages: Python, R, MATLAB, C/C++, SQL, HTML/CSS/JS, Node.js, React
GIS: ArcGIS Pro/Online, ArcPy, QGIS, Experience Builder
Data/Cloud: AWS (Lambda, EC2, S3, Redshift), Snowflake, PostgreSQL, MySQL
Geo/ETL: GDAL, GeoPandas, FME, H3
ML/DS: TensorFlow/Keras, classical ML, statistical modeling, visualization
Tools: Git, Jupyter, Highcharts, Figma

Education

M.S., Applied Data Science (GPA: 3.53/4)   2023 – 2024
Clarkson University, Potsdam, NY
B.E., Computer Science (GPA: 7.9/10)   2017 – 2022
Savitribai Phule Pune University, India

Certifications

OpenCV Bootcamp (OpenCV University) | MOOC Cartography (Esri) | CITI Social & Behavioral Research
Data Science (Internshala) | C Programming (Seed Infotech) | MOOC Modern Geo Apps (Esri)

Awards & Leadership

Selected as speaker, MobilityData Conference, Montréal (Oct 2024).
Phalanx Distinguished Service Award, Clarkson University (2023).
Secretary of the Treasury & Catering, Friends of India Association (2022–2023).
Technical Head, E-Cell Club (2019)