

Andrew Ding

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Visiting researcher at MIT and MSc Data Science candidate at ETH Zürich. Focused on machine learning and predictive modelling for geospatial problems, with published work in remote sensing and transport simulation.

EDUCATION

Massachusetts Institute of Technology · Visiting Student, City Form Lab	Sep 2026 – Present
ETH Zürich · MSc Data Science · Average Grade 5.6/6	Sep 2024 – Present
Coursework: Probabilistic Artificial Intelligence, Large Language Models, Big Data	
University of Waterloo · BSc, Honours Geomatics Co-op + Joint Honours Mathematics	Sep 2019 – May 2024
Average Grade 96.3% · Faculty Rank 1 of 2,362 · \$25,000+ in awards	
National University of Singapore · Exchange Semester · Average Grade 4.67/5.0	Aug 2022 – Nov 2022

EXPERIENCE

Visiting Researcher · Massachusetts Institute of Technology, City Form Lab	Sep 2026 – Jan 2027
- Extending the Urban Network Analysis pedestrian flow model with socioeconomic interaction terms to test income stratification of flows. - Calibrating income-disaggregated flow predictors against ~1,000 observed counts using Poisson, negative binomial, and penalized GLM regressions. MSc thesis advised by Andres Sevtsuk (MIT) and Konrad Schindler (ETH).	
Research Assistant · ETH Zürich, Center for Sustainable Future Mobility	Dec 2024 – Aug 2026
- Developed a multinomial logit framework for secondary location choice that jointly selects travel mode and destination, with location attractiveness and distance decay; evaluated against Swiss Microcensus data and the eqasim/MATSim pipeline. - Built an interactive validation platform to benchmark and visualize large-scale agent-based transport simulation outputs against ground truth data, with in-browser DuckDB preprocessing of raw MATSim output, containerized with Docker.	
Data Science Co-op · Capital One	May 2023 – Aug 2023
Adapted a Markov chain model to forecast customer charge-off rates by predicting delinquency progression, with transition matrices trained and validated on account histories queried from Snowflake.	
Spatial Data Analyst · BA Consulting Group Ltd.	Jan 2023 – Apr 2023
- Built client-facing interactive web applications in Mapbox GL JS and Turf.js. - Automated conversion of GTFS feeds into ArcGIS Pro Network Datasets, streamlining transit reach modelling and analysis.	
Research Intern · EPFL, Urban Demography Lab	May 2022 – Jul 2022
Developed and implemented a method for assigning census polygons to functional urban areas in developing countries in R (sf, raster). Method published in Habitat International (2026).	

PROJECTS

Secondary location choice for agent-based demand	2026
Discrete choice model that jointly selects travel mode and destination from 1.7M candidates using importance sampling. Matches ground truth distance distributions to the 95th percentile and picks locations 47% more attractive than the baseline.	
Predicting N2O emissions from agriculture	2026
Engineered temporal and nitrogen-decay features to predict N2O emissions from environmental data across six Swiss eddy covariance sites. Trained random forest and XGBoost models tuned by Bayesian optimization with SHAP attribution of drivers.	
MapSAM2: few-shot segmentation of historical maps (IEEE TGRS)	2026
Adapted SAM2 with LoRA for historical map segmentation, stacking multi-year Siegfried tiles as pseudo-video so memory attention tracks buildings across decades. Trained a YOLOv9 auto-prompter for fully automatic inference and built instance-level evaluation (Hungarian matching, J&F, COCO mAP). Improved J&F from 0.593 to 0.817 over base SAM2.	

PUBLICATIONS

4 peer-reviewed papers (remote sensing, urban geography, ecological modelling) in [IEEE TGRS](#) (2026), [Habitat International](#) (2026), [Canadian Journal of Zoology](#) (2022), [International Journal of Digital Earth](#) (2020), and a conference paper at [hEART 2026](#).

AWARDS

ESRI ECCE App Challenge, **First Runner-up** (2024). 3D web app on Vancouver zoning redevelopment (ArcGIS Maps SDK).
Fellow, Royal Canadian Geographical Society (2022). One of the youngest inductees into the [College of Fellows](#).
International Geography Olympiad (iGeo) (2019). Team gold and individual silver (37th of 166).

SKILLS

Languages & Tools: Python, R, SQL, JavaScript, Git, Docker, SLURM
Machine Learning: PyTorch, scikit-learn, XGBoost, LoRA/PEFT fine-tuning
Geospatial: ArcGIS, QGIS, GeoPandas, PostGIS, DuckDB, Mapbox