

LAPONE TECHAPINYAWAT

Ph.D. Candidate in Geospatial Computer Science, Texas A&M University–Corpus Christi
tgeology@gmail.com | Corpus Christi, TX
Willing to Relocate | STEM OPT Eligible | Expected to graduate in Fall 2025

PROFESSIONAL SUMMARY

Geospatial Analyst with expertise in GIS, remote sensing, and AI-driven spatial analysis. Skilled in applying **machine learning and deep learning** to automate geospatial workflows, improve land cover classification, and extract infrastructure features from UAV and satellite imagery. Proficient in building **Python-based workflows** for geospatial data processing, predictive modeling, and visualization.

Experienced in integrating **field measurements** (infiltration tests, sewer sensors, weather stations) with high-resolution spatial datasets to support **urban planning, stormwater management, and environmental decision-making**. Strong background in developing **high-resolution land cover datasets, hydrologic simulations, and geospatial dashboards**, with a focus on producing efficient, scalable, and actionable geospatial solutions.

Technical Skills

GIS & Remote Sensing:	ArcGIS Pro, QGIS, UAV Photogrammetry, LiDAR/DEM Processing, Raster & Vector Analysis, Image Classification & Segmentation, Spatial Statistics
Programming & Data:	Python (NumPy, Pandas, Rasterio, GDAL, GeoPandas, Shapely, Matplotlib), PostgreSQL/PostGIS (basic), Workflow Automation, Open-Source Geospatial Tools
AI & Machine Learning:	Deep Learning, Machine Learning, Graph Neural Networks (GNN), Spatiotemporal Modeling, PyTorch, Scikit-learn
Domain Expertise:	Discrete Element Modeling (Particle Flow Code), Urban Simulation, Impervious Surface Mapping, Hydrology & Stormwater Infrastructure Analysis, Watershed Delineation, Runoff Modeling
Collaboration & Reporting:	Interdisciplinary teamwork, Technical Report Writing, Map Design & Cartography

EDUCATION

Ph.D. in Geospatial Computer Science, (Expected Dec 2025)

Texas A&M University–Corpus Christi — **GPA: 4.00**

- Focus: AI-driven geospatial modeling, urban hydrology, and GeoAI applications
- Funded by NSF, NASA, and USBR grants

M.Sc. in Geological Engineering

University of Idaho — **GPA: 4.00**

B.Sc. in Geology

Chulalongkorn University, Thailand — **Second Class Honors**

PROFESSIONAL EXPERIENCE

Research Assistant — Texas A&M University–Corpus Christi (2022–Present)

- Produced **Corpus Christi's first 15 cm impervious surface land cover dataset** (2024) using UAV imagery and deep learning, improving stormwater planning accuracy.
- Automated **geospatial workflows in Python** (data cleaning, classification, feature extraction), significantly reducing manual GIS tasks and improving efficiency.
- Enhanced **urban land cover datasets** by extracting sidewalks and roads obscured by tree canopy using AI-based post-classification correction.
- Integrated **field hydrologic data** (weather stations, infiltration tests, sewer monitoring, diver loggers) with GIS/remote sensing datasets for stormwater infrastructure mapping.
- Conducted **UAV surveys and DEM generation** to capture micro-topographic features critical for flood modeling.
- Designed **automated pipelines** for classification and spatial analysis, cutting processing time significantly and improving reproducibility.
- Delivered decision-ready **maps, datasets, and reports** used in resilience and infrastructure planning.

Geophysicist — PTT Exploration & Production, Thailand (2015–2019)

- Conducted **subsurface geological interpretation** for hydrocarbon exploration in Oman and UAE.
- Performed **seismic-reservoir cross-analysis** to support multi-million-dollar bidding and commercial evaluations.
- Produced **geological cross-sections and subsurface maps** to guide engineering and exploration teams.
- Collaborated with engineers, geologists, and data scientists on **integrated spatial datasets**.

SELECTED PROJECTS

Urban Land Cover Mapping:	Created a citywide 15 cm impervious surface map using UAV imagery and deep learning; recovered sidewalks and roads hidden by canopy cover.
Infrastructure Feature Extraction:	Developed Python + GIS workflows to automate extraction of sidewalks and roads, enabling more accurate urban planning datasets.
Hydrologic Data Integration:	Combined UAV, DEM, and field hydrologic sensors into unified GIS layers for stormwater infrastructure and flood risk modeling.
Geospatial Workflow Automation:	Designed automated pipelines that cut data processing time significantly and improved reproducibility.

SELECTED PUBLICATIONS

- [1] **Techapinyawat, L.** & Zhang, H. (2025). A fill-and-spill modeling framework for urban runoff [Manuscript submitted for publication]. SSRN. <https://dx.doi.org/10.2139/ssrn.5373202>
- [2] **Techapinyawat, L.**, Wang, W., Mehrubeoglu, M., & Zhang, H. (2024). GraphParcelNet: Predicting parcel-level imperviousness from geospatial vector data using graph neural networks. In *Proceedings of the 32nd ACM International Conference on Advances in Geographic Information Systems (SIGSPATIAL '24)*. <https://doi.org/10.1145/3678717.3691281>
- [3] **Techapinyawat, L.**, Timms, A., Lee, J., Huang, Y., & Zhang, H. (2024). Integrated urban land cover analysis using deep learning and post-classification correction. *Computer-Aided Civil and Infrastructure Engineering*, 39(20), 3164–3183. <https://doi.org/10.1111/mice.13277>
- [4] Garcia, H., **Techapinyawat, L.**, Lee, J., & Zhang, H. (2024). Equitable stormwater utility fees: An integrated analysis of environmental, socioeconomic and infrastructure factors at the community scale. *Environmental Research: Infrastructure and Sustainability*, 4(4), 041001. <https://doi.org/10.1088/2634-4505/ad8305>
- [5] **Techapinyawat, L.**, Jung, S. J., & Abdo, A. M. A. (2023). Development of a calibration procedure for rock testing in particle flow code simulations. *International Journal of Mining and Mineral Engineering*, 14(3), 223–246. <https://doi.org/10.1504/IJMME.2023.137302>
- [6] **Techapinyawat, L.**, Goulden-Brady, I., Garcia, H., & Zhang, H. (2023). Aerial characterization of surface depressions in urban watersheds. *Journal of Hydrology*, 625, 129954. <https://doi.org/10.1016/j.jhydrol.2023.129954>

PRESENTATIONS

- [1] *Uncovering Hidden Impervious Surfaces Under Tree Canopies: Comprehensive Urban Land Cover Classification with 15-cm Imagery and Vector-Based Corrections*. L. Techapinyawat, A. Timms, J. Lee, Y. Huang, H. Zhang. AGU Fall Meeting 2024.
- [2] *Utilizing Unmanned Aircraft Systems (UAS) for Identifying Surface Depressions in Urban Watersheds: How Reliable Is It?* L. Techapinyawat, I. Goulden-Brady, H. Garcia, H. Zhang. AGU Fall Meeting 2023.

AWARDS & RECOGNITION

- SEAS Global Engagement Scholarship
- College of Engineering Scholarship — Texas A&M University–Corpus Christi
- Geospatial Surveying Engineering Scholarship
- Graduate Research Assistantship (NSF/NASA/USBR/DOI funded)
- NSF Travel Award — ACM SIGSPATIAL 2024
- Fully Funded Scholarship (Tuition + Allowance) — PTT Exploration & Production