

# Jun (Jennifer) *Luu*

## EDUCATION

University of Pennsylvania  
Master of Urban Spatial Analytics  
Weitzman School of Design  
Expected May 2026 · GPA 3.88 / 4.0

Virginia Tech  
B.S. in Construction Engineering and Management  
May 2022 · Dean's List ×4

## TECHNICAL SKILLS

**PYTHON** pandas, GeoPandas, scikit-learn, SciPy, NumPy, Rasterio, Shapely  
**R** tidyverse, tidycensus, sf, leaflet, ggplot2  
**MACHINE LEARNING & AI** Self-Organizing Maps, TF-IDF, sentence embeddings, Random Forest, k-means, Anthropic API, synthetic data generation  
**SPATIAL ANALYSIS** ArcGIS Pro, QGIS, PostGIS, Google Earth Engine, Mapbox, CARTO, Moran's I / LISA, spatial cross-validation  
**DATA & VISUALIZATION** SQL, Jupyter, Quarto, Git / GitHub, Seaborn, Plotly, HTML / CSS / JS, Excel, Looker, Adobe InDesign

## RESEARCH

### Mapping New Vocabularies of Neighborhood Change: An Inductive Text Analysis of Real Estate Listings

Nov 2025 – Present

*Pls: Prof. Elizabeth Delmelle (University of Pennsylvania) & Prof. Isabelle Nilsson (UNC Charlotte) · Presented at AAG Annual Meeting, San Francisco, March 2026*

- Developed a generalizable inductive text analysis pipeline applying **TF-IDF vectorization** to MLS listing remarks across Mecklenburg County, NC to identify latent vocabulary patterns signaling neighborhood change across census tract-periods.
- Implemented a **Self-Organizing Map (SOM)** trained on listing language to cluster neighborhoods by linguistic profile, enabling unsupervised detection of gentrification stages without imposing predetermined typologies.
- Analyzed temporal sequences of SOM cluster membership across tract-periods to construct a **transition matrix** of neighborhood trajectories, tracing how individual tracts move through discursive market segments over time.

### Synthetic MLS Remark Generation via Batch API

2025

*Support pipeline for thesis research · Solo*

- Designed and built a **batch API pipeline** using the Anthropic API to generate synthetic real estate listing remarks conditioned on neighborhood type, price tier, and time period, augmenting sparse tract-period cells in the Mecklenburg County dataset.
- Generated remarks are flagged with an **is\_synthetic field** for downstream validation and sensitivity analysis, enabling direct comparison of model behavior with and without synthetic augmentation.
- Pipeline processes tract-period pairs with fewer than a minimum observation threshold, matching the style, vocabulary, and temporal register of real MLS remarks using few-shot prompting from real data samples.

### Predicting Eviction Risk in Philadelphia: A Spatiotemporal Modeling Approach

2025

*Collaborative with Jed Chew, Mark Deng, and Mohammad AlAbbas · MUSA 5080, University of Pennsylvania*

- Cleaned and joined Eviction Lab filings (2020–2025), Philadelphia crime records, 311 service requests, ACS census variables, and real estate tax delinquency data into a unified monthly panel dataset across all Philadelphia census tracts.
- Engineered features including a **tract vulnerability index**, distance-to-hotspot measures, and temporal lag variables (1, 3, 6, and 12 months) to capture spatial and temporal structure in eviction filing patterns.
- Applied **Moran's I** and **LISA** spatial autocorrelation diagnostics to validate spatial structure, then implemented a **Poisson regression model** with spatial and temporal lags to forecast eviction filings by census tract.

## RESEARCH POSITIONS

### Research Analyst

Feb 2026 – Present

**PENN INSTITUTE FOR URBAN RESEARCH** — University of Pennsylvania, Dr. Eugenia Birch

- Wrote foundational research memo defining scope, analytical framework, and survey strategy for a multi-year study on Penn's role as an anchor institution, informing research on a **\$37.7B annual regional economic footprint**.
- Developed and mapped a spatial inventory of Penn's full regional footprint using **ArcGIS Pro, R, and Adobe InDesign**, producing deliverable-quality maps of West Philadelphia and the broader metro region.
- Designed survey frameworks across major stakeholder populations: university deans, regional business owners, and health system patients and professionals.

### Geospatial Research Assistant

Sept 2025 – Present

**CENTER FOR AIR TRANSPORTATION RESILIENCE (CATRES)** — NASA University Leadership Initiative, Dr. Megan Ryerson (Penn) & Dr. Mark Hansen (UC Berkeley)

- Constructed an end-to-end data pipeline processing **25.4 million U.S. flight records** across 45 months (BTS + FAA) with fully reproducible, modular notebooks tracked in Git.
- Developed a temporal clustering algorithm isolating **64,815 diversions across 377 airports**, distinguishing system-wide cascade events from regionally contained disruptions.
- Built an interactive **Plotly / Panel dashboard** and Quarto documentation site translating findings into actionable recommendations for airline operations, airport capacity planning, and FAA policy.
- Identified that American Airlines diverted **29% more frequently than Delta** despite comparable network size, with implications for hub scheduling and operational resilience policy.

## PROFESSIONAL EXPERIENCE

### Assistant Project Manager

Aug 2024 – Jul 2025

**FAIRSTEAD** — NYCHA Reid Apartments PACT/RAD Conversion, Brooklyn, NY

- Coordinated occupied renovation of **16,000+ NYCHA Section 8 housing units** under federal housing preservation compliance, managing workflows across relocation coordinators, construction teams, property management, the NYC housing authority, and resident liaisons.
- Designed and implemented a **unit-level progress tracking dashboard** monitoring renovation status across all units, enabling real-time decision-making on construction sequencing and tenant relocation to minimize disruptions.
- Researched Section 8 regulatory compliance and housing preservation frameworks to inform phased construction strategy under the PACT/RAD conversion program.

### Field Engineer

Oct 2023 – Jul 2024

**HENSEL PHELPS** — Harbor-UCLA Medical Center, Los Angeles, CA

- Developed logistics and scheduling strategies for complex infrastructure systems on a major healthcare campus serving majority low-income and uninsured patients in LA County.
- Audited cost estimates and identified discrepancies, **preventing \$250,000 in unaccounted material costs**.
- Collaborated with cross-functional teams to resolve technical and operational challenges across multiple active subcontractors.

### Assistant Engineer

May 2021 – Sept 2023

**TURNER CONSTRUCTION COMPANY** — Advocate Illinois Masonic Medical Center, Chicago, IL

- Coordinated seven subcontractors managing specialized systems on a major occupied hospital expansion with complex phasing to maintain full operations throughout construction.
- Analyzed contract documentation and budget data to identify cost and schedule risks, **value-engineering over \$100,000 in savings** on door upgrade specifications.
- Implemented a resource allocation tracking system monitoring personnel and material staging daily, optimizing site logistics for parking, equipment access, and workflow efficiency.

## PRESENTATIONS

2026 **Mapping New Vocabularies of Neighborhood Change: An Inductive Text Analysis of Real Estate Listings**

American Association of Geographers Annual Meeting — San Francisco, CA, March 2026

## LEADERSHIP & COMMUNITY

### Women Build Team Lead

2023

**HABITAT FOR HUMANITY** — CHICAGO, IL

Led a team of 10 women to construct permanent affordable homes. Coordinated logistics, training, and team dynamics to ensure project completion and positive community impact.

### Mixed-Use Team Competition Coach

2023 – 2024

**USC CMAA** — LOS ANGELES, CA

Created and taught lesson plans on construction project management, cost estimating, scheduling, and superintending. Prepared team for collegiate competition through technical training and mentorship.