Yilun Zha

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Research Area: **Food Access, Retrofitting Suburbia, Spatial Data Science**

EDUCATION

GEORGIA INSTITUTE OF TECHNOLOGY 2019/08 – present
Ph.D. in ***Urbanism***, *M.Sc. in* ***Urban Design***
M.Sc. in ***Statistics***
Minor: Public Health, GPA:3.91/4.0, Brook Byers GRA Fellowship (2021-2023), Tongji-GT Dual-Degree Scholarship (2017-2018)

TONGJI UNIVERSITY 2012/08 – 2019/05
B.Eng., M.Eng. in ***City Planning*** (Track: Community Planning and Urban Design)
Scholarship of Excellence (2011, 2014), Excellent Graduate Thesis (2019)

WORKING EXPERIENCES

Georgia Institute of Technology 2021/06 – present
Center for Spatial Planning Analytics and Visualization (Dr. Elora Raymond); School of Architecture (Prof. Ellen Dunham-Jones)
Quantitative Research Assistant / Graduate Teaching Assistant
- took charge of retrievement, maintenance, and query of large datasets related to various research projects.
- deployed statistical learning algorithms to provide quantitative insights on issues studied.
- developed static and interactive visualizations for research reports, web post, and academic papers.
- graded student papers of graduate-level courses including Theories of Urban Design, History of Urban Form, and Retrofitting Suburbia.

U.S. Environmental Protection Agency 2020/05 – 2020/08
National Risk Management Research Lab (Supervisor: Dr. Wesley Ingwersen, US EPA; Prof. Valerie Thomas, Georgia Tech)
Summer Intern: Material Flow Data Tracking and Analysis
- scraped and integrated socio-economic and labor statistics from Census, BLS, and BEA.
- developed mathematical algorithm to break down GDP into finer-grained geographic unit and impute missing entries (~36%).
- communicated with clients from local authorities in Georgia on specified industries/sectors and expected output format.
- created web interactive visualization of industry/sector input and output by bubble chart, sankey diagram, and choropleth.

Calthorpe Associates 2018/03
Urban Design Intern
- produced analytical diagrams on street types and transportation modes for TOD New Town Masterplan in Jinan, China.
- assisted urban designed in chief with new transportation network proposal and urban design layouts.
- communicated with clients from Jinan Municipal Government and discussed over detailed issues on master plan layouts.

RESEARCH PROJECTS

Large corporate buyers of residential rental housing during the COVID-19 pandemic 2021/08 –
(funded by the Housing Crisis Research Collaborative, managed by the Urban Institute, PI: Dr. Elora Raymond)
- processed and cleaned Zillow Transaction and Assessment Dataset (~250G quarterly) through distributed file storage system using Spark.
- developed multivariate decision rules to detect and geocode large corporate buyers of rental single-family housing.
- generated statistics on key indices including transaction count and housing price during time span of the study.
- reported weekly to PI on major insights and trends and assisted with report writing and visualization.

Geospatial Modeling of Food Access and Nutrient-related Disease Rate in Atlanta Metro Area 2020/08 – 2021/01
(individual work, results presented in ISOCARP 2021 and 8th Atlanta Studies Symposium)
- scraped and cleaned 20k food venues' POI data in Atlanta Metro from Yelp Fusion API.
- built a gravity-based model for census-tract dietary choices based on household income, car ownership, distance, etc.
- developed a Spatial Autoregressive Regression (SAR) and Conditional Autoregressive Regression (CAR) to predict the prevalence of nutrient-related diseases and achieved 82% accuracy in 5-fold cross validation, compared to 76% with non-spatial model.

The SuRe Gap: Bridging the Gap Between Idealized and Attainable Infrastructure Sustainability and Resilience 2020/02 – 2020/05
(best poster award in EDRA51, PI: Prof. Ellen Dunham-Jones)
- proposed the detailed list of sustainability metrics to be measured on all 6 sites of case studies included in this study.
- Performed a keyword relevance and analysis on most-discussed design topics and visualized through a Sankey diagram.
- developed the layout and content of conference poster.

Spatio-Temporal Modelling of Mobility Patterns and Exposure to COVID-19 in New York City 2021/10 – 2021/12
- created and cleaned a bipartite graph consisting of 70k POI nodes, 2k census tract nodes, and 2M edges.
- trained a Spatio-temporal Neural Network Model to predict actual case rate and achieved 55-220% improvement over vanilla ARIMA model.
- performed a detection on exposure hot spot based on parameters learned and proposed guidance on exposure mitigation recommendations.

SKILLS

Programming Language: Python, R, Java, SQL, JavaScript, HTML/CSS
Database / Big Data: MySQL, Apache Spark, PostgreSQL, Hadoop, Git, AWS
Visualization: Tableau, D3, ggplot, seaborn, Adobe Suites, Mapbox, Microsoft Excel, Power BI
Spatial Analytics: ArcGIS, QGIS, PostGIS, GeoDa