

# YIFENG LIU

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Department of Urban Studies and Planning, MIT  
235 Albany St, Cambridge, MA

## EDUCATION

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### Massachusetts Institute of Technology

Master of City Planning & Master of Science in EECS

Cambridge, MA

Aug 2023 – Present

- Related Courses: Optimization Method, Modeling with Machine Learning: Algorithms and Applications, Intro to Probability...

### School of Architecture, Tsinghua University

Bachelor of Architecture

Beijing, China

Sep 2018 – Jun 2023

- Related Courses: Multivariate Statistical Analysis, Design and Analysis of Experiments, Linear Regression Analysis, Programming Fundamentals, Big Data and Machine Intelligence ...

- Other Achievements: Academic Advancement Program Outstanding Scholar; Outstanding Individual for Rural Revitalization(2019)

## RESEARCH INTEREST

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My research interest lies at the confluence of **urban informatics**, **machine learning modeling** and **data-driven optimization** with a keen focus on **facility management**, **transportation systems**, and **market behaviors**. I am dedicated to leveraging these insights to enhance urban operations and optimize public resources for the greater social benefit.

## RESEARCH EXPERIENCE

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### Sustainable Urbanization Lab, Center for Real Estate, MIT

Market Scientific Research on the Promotion of Heat Pump in Cities (In Progress)

Cambridge, MA

Sep 2023 - Present

- Using regression models to understand heat pump market dynamics and consumer behavior in Massachusetts

- Sensitivity analysis based on the size of the estimated time window

### Future Urban AI Studio, Tsinghua University

Infrastructure Analysis based on NYC 311 Service (In Progress)

Beijing, China

July 2023 - Present

- Establishment and management of NYC infrastructure database

- The reliability of urban infrastructure analysis by analyzing the temporal dimension of 311 service data and their spatial correlation

### Jogging Activity and Public Health

April 2022 - Aug 2023

- Relevant Publication: *Analyzing jogging activity patterns and adaptation to public health regulation*, Liu Y, Lai Y. *Environment and Planning B: Urban Analytics and City Science*, 0(0). <https://doi.org/10.1177/23998083231193484>

### Beijing Infrastructure Analysis

March 2022 - Oct 2022

- Relevant Publication: *Do Vibrant Places Promote Active Living? Analyzing Local Vibrancy, Running Activity, and Real Estate Prices in Beijing*, Lai Y, Li J, Zhang J, Yan L, Liu Y. *International Journal of Environmental Research and Public Health* 19.24 (2022): 16382.

<https://doi.org/10.3390/ijerph192416382>

### Informal Urban Settlements Computing

Jan 2022 - April 2022

- Relevant Publication: *Computing Places and Human Activity in Data-absent Informal Urban Settlements*, Y. Lai and Y. Liu, 2022 IEEE International Conference on Pervasive Computing and Communications Workshops and other Affiliated Events (PerCom Workshops), 2022, pp. 478-483, <https://doi.org/10.1109/PerComWorkshops53856.2022.9767381>

### ATOMS ATELIER Urban Analysis Group

Algorithm development and statistical analysis

May 2022 - Oct 2022

- Relevant publication: *Investigating the Impact of Perceived Micro-Level Neighborhood Characteristics on Housing Prices in Shanghai*, Song, Q.; Liu, Y.; Qiu, W.; Liu, R.; Li, M. *Land* 11.11 (2022): 2002. <https://doi.org/10.3390/land11112002>

## TEACHING EXPERIENCE

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### 11.S954 Applied Data Science for Cities [course website](#)

DUSP, MIT

Teaching assistant

*fall 2023*

Assist teachers to make course plans and courseware, grade homework

Assist students in completing independent urban quantitative research course projects

### 11.205 Introduction to Spatial Analysis and GIS

DUSP, MIT

Teaching assistant

*fall 2023*

An introduction to Geographic Information Systems (GIS), enabling the use of mapping for data analysis across various fields

Responsible for recitation

## OTHER ACADEMIC EXPERIENCE

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### Optimization Method - final group project

MIT Course Work

[COVID Testing Facility Allocation in 2022 lockdown Shanghai](#)

*Nov 2023 – Sep 2023*

- Employed flow network optimization techniques to distribute COVID testing sites based on population density data, achieving full coverage without additional costs and preparing a scalable model for city-wide implementation.

### PassBy - AR application Development

Summer Workshop

An inclusive template to assist people in blocked subway feeling the surficial city via AR

*May 2022 – Sep 2022*

- Google Street View crawling and relocation processing of flicker photo of downtown Tokyo (location of photo in Street View)

- AR app development based on Unity (Vuforia) - Unity APP testing and user usage research, design development

### Big Data and Machine Intelligence - final individual project

THU Course Work

Street view element segmentation based on tensorflow framework

*Feb 2022 – Jun 2022*

- Explore the relationship between people's evaluation of the security in streetview and the distribution of infrastructure

- Establish and maintain the Crowdsourcing data platform and its database - Train a Mask R-CNN model for street view segmentation and correlative study with the crowdsourcing comments

### Chinese Mathematics Olympiad

Zhejiang, China

The third prize

*fall 2017*

## PROFESSIONAL EXPERIENCE

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### CityDNA tech

Beijing, China

Data Analysis Internship

*Jun 2022 – Aug 2022*

- Establish a database based on human activities and infrastructure data provided by the Tianjin and Changzhou municipal governments. Measure the completion rates of roads and infrastructure construction in the city.

- Organize the database that can reflect the use of the online platform, and build the inductive statistical data visualization platform

### People's Architecture Office

Beijing, China

Architecture Design Internship

*Jun 2021 – Aug 2021*

- Plug-in house product design and building structure research and development

- Architectural analysis diagrams drawing and rendering

### COFCO China National Cereals, Oils and Foodstuffs Corporation

Shenzhen, China

Business Development Internship

*Jun 2020 – Jul 2020*

- Construction simulation and project cost estimation, combined with sales and construction cycle, guide the bidding of real estate land.

## SKILL

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**Languages:** English (professional), Chinese (native), Julia, Python, C, C++, PostgreSQL, R, JS, and HTML

**Programming:** Gurobi, Geopandas, Tensorflow, Dask, Skcikit-learn, PostgreSQL, MongoDB...

**Design, Construct & Graphic :** Adobe Design Suite, QGIS, Rhino, Mapbox, AutoCAD, V-ray, Enscape, figma, Unity(Vuforia) ...