# Tianyu Su

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## EDUCATION

### **Massachusetts Institute of Technology (MIT)**, Cambridge, MA

*Master in City Planning, Concentration in Urban Information System (GPA: 4.9/5.0)* 08/2018 – Present

- Coursework:
  - **Urban Studies**: Gateway: Urban Studies and Planning; Introduction to Urban Design and Development; Industrial Urbanism: Places of Production, Kiryat Shmona, Israel.
  - **Quantitative Analysis and Data Science**: Deep Learning for Transportation, Advances in Computer Vision, Data Science and Machine Learning for Real Estate, Big Data and Visualization, Spatial Database Management and Advanced GIS, Quantitative Reasoning & Statistical Methods, Introduction to Probability, Introduction to Spatial Analysis, Microeconomics.
  - **Entrepreneurship:** Technological Change and Innovation for the Built Environment, Product Management.
- Awards & Grants:
  - MIT Sandbox Innovation Fund, MIT, 2018-2020
  - MIT Connect Arts, Community, and Computing Challenge, First Place, MIT, 2019
  - Design Intelligence Award | Digital Interaction, Honorable Mention, China Academy of Art, 2019
  - Sasaki Foundation Design Grants 2019, Sasaki Foundation, 2019
  - William Emerson Travel Grant, School of Architecture and Planning, MIT, 2019
  - Graduate Fellowship, Department of Urban Studies and Planning, MIT, 2018-2020

### **Tsinghua University**, Beijing, China

*Master of Architecture (GPA: 91.2/100, Top 1 of 154)* 08/2016 - 07/2018

- Thesis: Functional Programming for National Sliding Center of 2022 Winter Olympic Games, Advisor: Prof. SHAN Jun, Prof. LI Xinggang
- Awards: National Scholarship; Beijing's Outstanding Graduate Award; Grand Prize, Shanghai Urban Design Challenge

### **Tsinghua University**, Beijing, China

*Bachelor of Architecture (GPA: 90.1/100, Top 10 of 93)* 08/2012 - 07/2016

- Awards: Excellent Graduate; BIAD Design Scholarship; Skidmore, Owings & Merrill (SOM) China Prize

## RESEARCH EXPERIENCE

### **MIT Media Lab**, Cambridge, MA

*LivingLine Researcher in City Science Group* 02/2019 – Present

- Leading Wi-Fi data analysis in the LivingLine Shanghai project, covering cleaning, grouping, de-noising, and mapping location data.
- Improved the accuracy of router detection to 96% by the application of machine learning models and filtering algorithms (Python).
- Clustered urban citizens into 4 groups by building an automated data gathering and analyzing workflow based on more than 1 million records of near real-time Wi-Fi data (Python).
- De-noising and generating individual trajectories by developing an Extended Kalman Filter algorithm and deploying it to the time-series Wi-Fi fingerprint data (Python).
- Teamed with engineers, data scientists, and designers to develop an open-source urban decision-making platform (Unity 3D, C#), accessible to urban researchers, planners, and governments all around the world.

### **MIT Urban Mobility Lab**, Cambridge, MA

*Independent Study with Prof. Jinhua Zhao* 09/2019 – Present

- Studying the dependence between commute mode choice and commute history (inertia and serial correlation).
- Improving the prediction accuracy of commute mode choice by applying discrete choice modeling and LSTM model on combined HR data and travel history data (R, Python).
- Helping MIT prepare tailored commute subsidy programs by developing a recommendation system.

### **MIT Office of Sustainability**, Cambridge, MA

*Analytics and Visualization Fellow* 05/2019 – 09/2019

- Identified mode-switching potentials of MIT commuters (faculty, employee, student) by aggregating, analyzing, modeling (statistical models and machine learning), and visualizing unstructured datasets (R) from HR Department, Department of Facilities, and MBTA.
- Supported the institutional decision-making around sustainable transportation by creating informative visualizations, maps, and presentations with a team of data scientists, for the communication with different stakeholders at MIT and beyond
- Reduced the time cost into 1/3 for aggregating HR data into block group level and mapping travel time of various modes by deploying a customized algorithm based on national GeoID and Google Map API (R, JavaScript).

**Department of Urban Studies and Planning, MIT**, Cambridge, MA

*Research Assistant* 10/2018 – Present

- Assisting Prof. Anne Whiston Spirn on the West Philadelphia Landscape Project by analyzing and visualizing geo-spatial data (land use, hydrological networks, elevation/terrain, etc.), property data, unstructured real estate transaction data (ArcGIS, R) and presenting the results in different formats, like web mapping (CARTO) and web development.
- Queried out 21328 properties owned by organizations from 98026 properties using a SQL model targeting the property owners (R).
- Figured out the trend and peaks of transactions happening in West Philadelphia by studying the time-series real estate transaction data.

**Harvard Kennedy School**, Cambridge, MA

*Research Assistant* 05/2019 – 06/2019

- Worked with Prof. Andres Sevtsuk as part of City Form Lab's collaboration with the Harvard Kennedy School's Innovation Field Lab.
- Featured housing challenges in 10 cities around New York Area by compiling GIS data and developing a series of maps.
- Explored root causes behind "problem properties" by mapping vacant properties, fire incidents, call for services, code violations, as well as historical Red Lining boundaries.

## PRACTICAL EXPERIENCE

**Sasaki Foundation**, Watertown, MA

*Lead of Rentify Chinatown Project funded by 2019 Sasaki Foundation Design Grant* 09/2019 – Present

- Selected as one of top 3 projects for a 9-month funded program ($15,000) based on multidisciplinary innovation and potential impacts.
- Leading a cross-functional team (designers, engineers, marketers, etc.) to provide suggestions for local governance and decision-making, as well as to outreach both within Sasaki Foundation and organizations in Boston Chinatown.
- Delivering a data-driven solution to Chinatown Land Trust for identifying local cultural identity, by gathering and analyzing open-source big data (POI, etc.) and crowdsourced micro data (Python, R).

**Routable AI**, Boston, MA

*Product Manager and Designer (Course Project of Product Management 101 at Harvard Business School)* 09/2019 – Present

- Defining a customer product for commuters taking on-demand shared shuttles and buses by conducting customer and market research.
- Developing the idea to prototypes by building personas for daily commuters, launching Lo-Fi and Hi-Fi user test with evaluating metrics at scenarios, mapping user journeys & storyboards, and designing UX wireframes.
- Iterating prototypes by evaluating product performance, analyzing user feedback, tailoring, and adjusting features for commuters.

**China Architecture Design & Research Group**, Beijing, China

*Architect Intern* 10/2017 - 01/2018

- Programmed and designed the Logistic Compound of the National Sliding Center for 2022 Winter Olympic Games in Hebei, China.
- Optimized the collaboration between the design team and the engineer and construction teams by systematizing the workflow of programming for more than 700 functions.

**United Nations Development Programme (UNDP)**, Beijing, China

*Architect Intern* 09/2017 - 10/2017

- Worked closely with GE Yunyan, Deputy Country Coordinator in UNDP to communicate with stakeholders and conceptualize the office renewal design for UNDP Beijing.
- Shaped a design proposal for the Office Renewal Project based on the user feedbacks, submitted to UN Headquarters.

**Founder and Product Lead** at **Tech-Vernacularism/Spatial Intelligence** (MIT UrbanTech Startup providing insights based on spatial data)
*Sandbox Innovation Fund (2018); Harvard innovation labs CONNECT Program (2019); Finalist, Penn Wharton China Summit (2019)*

## PUBLICATIONS AND WORKING PAPERS

- **Methodology and application of data augmented design: A case study of urban redevelopment design for the Panyu-Xinhua Area, Shanghai**, 2019, *Handbook on Planning Support Science, Edward Elgar Publishers (First Author)*
- **How innovation affects innovation in SF: Incubators, accelerators & co-working spaces' spatial distribution in San Francisco**, 2019, *16th International Conference on Computers in Urban Planning and Urban Management, Wuhan, China*
- **Homes or "Hotels"? Evaluating Incentives Using Propensity Score Matching and Spatial Clustering in Greater Boston**, 2019, *City+2019: The International Conference for PhD Students and Early Career researchers on Urban Studies, Delft, Netherlands*
- **Modeling MIT commute choices in the presence of serial correlation by DCM and deep learning** (Working Paper)
- **Who, where, how: Indicating street-scale human behavior patterns by real-time WiFi data** (Working Paper)

## TECHNICAL SKILLS AND LANGUAGES

- Skills: **Data Analysis and Visualization** (R, Python, SQL), **Spatial Analytics** (ArcGIS, QGIS, CARTO, Mapbox), **Machine Learning** (PyTorch, scikit-learn), **Web Development** (HTML, CSS, JavaScript, D3), **3D Design and Modeling** (Rhino, SketchUp, Vray), **Augmented Reality** (Unity 3D, Vuforia)
- Language: English (Fluent), Chinese (Native)