

# Leilei Duan

Spatial Sciences Institute  
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## CURRENT APPOINTMENT

Lecturer (2019 - present)    Spatial Sciences Institute, University of Southern California, CA

## EDUCATION

Ph.D.                                    Design, Construction and Planning, University of Florida, 2018  
Dissertation: Exploring Geodesign: Using Three-dimensional Parametric Modeling Techniques in Conjunction with Two-dimensional Land-use Models to Better Visualize Future Growth  
Advisor: Paul Zwick

M.S.                                    Interdisciplinary Ecology, University of Florida, 2018

M.S.                                    Urban and Regional Planning, University of Florida, 2014

B.S.                                    Urban Management, East China University of Science and Technology, 2011

B.S. (minor)                        Finance, East China University of Science and Technology, 2011

## PROFESSIONAL EXPERIENCE

2017 – present    Co-founder and administrator for Geodesign Wiki website:  
<https://geodesignwiki.github.io/>

2018 - 2019        Spatial Sciences Institute, University of Southern California, Los Angeles, California  
Post-doctoral Teaching Fellow

2014 – 2018        Research assistant at College of Design, Construction and Planning  
Supervisor: Dr. Paul Zwick, Dr. Ilir Bejleri  
Explored the Geodesign workflow in population and employment allocation process  
Analyzed statewide traffic safety data; explored the impact of land use patterns changes on traffic crashes.

2016                RS&H, Tampa, Florida (Summer 2016)  
Visualization Intern

- Created 3D models of the City of Tampa using CityEngine to support the Tampa Bay Expressway (TBX) project, and provided GIS demographic data and built environment data analysis support.

2015                RS&H, Jacksonville, Florida (Summer 2015)  
Transportation Planning Intern

- Provided GIS analysis support for multiple projects, developed part of the GIS Technician Guide for RS&H, and hosted two Lunch and Learn events presenting new GIS techniques that can be applied to the current workflow.
- 2010 Kunming Urban Planning and Design Institute, Kunming, China (Summer 2010)  
Transportation Planning Intern
- Involved in urban district reformation, and conducted relevant environment evaluations.
- 2010 Kunming City Planning Bureau, Kunming, China (Summer 2010)  
Transportation and Environmental Planning Intern
- Participated in green field planning of Panlong District

## HONORS AND AWARDS

*University of Florida, Gainesville*

- 2014 - 2018 Graduate School Fellowship
- 2017 Outstanding International Student Award

## PUBLICATIONS

### Referred Journal Articles

### Refereed Journal Articles

- 2022 Bacevice, P., Ruddell, D., and **Duan, L.** (2022) Bell Works: Lessons from a Transformational Redevelopment. Available at SSRN: <https://ssrn.com/abstract=4109273> or <http://dx.doi.org/10.2139/ssrn.4109273>
- 2019 Murtha, T., Wang, L. & **Duan, L.** (2019). Historical Analysis of Land Use Change and Geodesign of Rapid Urbanization: Orlando, Florida, USA. *Journal of Digital Landscape Architecture*, 4-2019, 205 – 212.

### Manuscripts in Preparation

- Duan, L., Lin, Y. & Chiang, Y.-Y. “Geodesign in the Era of Big Data and Artificial Intelligence.” *International Journal of Geographical Information Science*. (in preparation)
- Duan, L., Zwick, P. & Mao, L. “Proposing a Three-digit Index to Better Understand Urban Quality of Life.” *Sustainability*. (in preparation)
- Duan, L., Zwick, P. & Bejleri, I. “Exploring the Use of Procedural Three-dimensional Modeling Techniques to Visualize Urban Form Changes.” *Journal of Urban Design*. (in preparation)

## PRESENTATIONS

### Conference Presentations

- 2021 “Training the Next Generation Geodesign Practitioners for Leveraging AI in Environmental Sciences” 3rd NOAA AI Workshop. Online. September 7-17.
- 2022 “Examining the Equity of Access to Health Care: A Comparison Between Shanghai and Los Angeles” American Collegiate Schools of Planning Annual Conference. Toronto, Ontario. Nov 3-5. (Upcoming)
- 2021 “Training the Next Generation Geodesign Practitioners for Leveraging AI in Environmental Sciences” 3<sup>rd</sup> NOAA AI Workshop. Online. September 13-17.
- 2020 “Procedural Modeling in Active Transportation (Bus, Bike, Walk) for City Sustainable Development.” Geodesign Summit. Redlands, California. February 24-27.  
Presentation video recording: <https://bit.ly/3aIqKDy>
- 2019 “How Learning Happens in Geodesign” Education, Design and Practice – Understanding skills in a Complex World. Stevens Institute of Technology. Hoboken, New Jersey. June 17-19..
- 2019 “Exploring Geodesign: Using Three-dimensional Parametric Modeling Techniques in Conjunction with Two-dimensional Land Use Models to Better Visualize Future Growth” American Association of Geographers. Washington DC. April 3-7..
- 2019 “Generalized Procedural Rules for TOD & Urban Allocations” Geodesign Summit. Redlands, California. Feb 25-28..  
Presentation video recording: <https://bit.ly/2Vwd54X>
- 2018 “Exploring Geodesign: Using Three-dimensional Parametric Modeling Techniques in Conjunction with Two-dimensional Land Use Models to Better Visualize Future Growth” American Collegiate Schools of Planning Annual Conference. Buffalo, New York. Oct 25-28.
- 2017 “Detecting Development Opportunities Using Quality of Life Research and Land Use Suitability Modeling: A Case Study of the City of Tampa” American Collegiate Schools of Planning Annual Conference. Denver, Colorado. Oct 12-15.
- 2017 “Using 3D-GIS Based Parametric Modeling to Understand the Future Growth of Cities” Urban and Regional Information Systems Association Annual Conference. Jacksonville, Florida. Oct 23-26.
- 2017 “Using 3D parametric modeling to understand the future growth of cities: Simulating 3D infill allocation in the City of Tampa” 8th International Visualization in Transportation Symposium: Visualization in Action. Washington, DC. July 27-28.  
Presentation video recording: <https://bit.ly/2Hp4qNI>
- 2016 “Exploring Volumetric Population Allocation Based on a Trend Growth Model: A Case Study of Infill Allocation in the City of Tampa” American Collegiate Schools of Planning Annual Conference. Portland, Oregon. Nov 3-6.
- 2015 “Exploring the Use of Three-Dimensional Urban Simulation to Model Development Opportunities Based on Suitability Modeling and FBC Regulations” American Collegiate Schools of Planning Annual Conference. Houston, Texas. Oct 21-25.
- 2014 “Three-Dimensional Urban Simulation for Form-Based Codes” Florida American Planning Association Conference. Jacksonville, Florida.

### **Conference Panels Organized**

- 2019 “Geodesign – Current research and practice” American Association of Geographers. Washington DC. April 3-7.
- 2017 “Pedagogy in Geodesign Education” American Collegiate Schools of Planning Annual Conference. Denver, Colorado. Oct 12-15.

**Webinars and Videos**

- 2022 New Economy Majors Info Session (hosted by Estrela Consulting). Online. April 28 (co-presentation with S. Fleming).
- 2021 “Virtual Information Session GIS in Sustainable Cities and Urban Planning” GIST Recruitment Webinar. Online. March 11 (co-presentation with R. Vos).
- 2021 “Using the Spatial Sciences to Reimagine the Future: Creating a Healthier, Livable, and Sustainable World” International Academy Webinar. Online. January 26 (co-presentation with J. P. Wilson).

**Invited Talks**

- 2022 “Geodesign and Potential AI Applications” GeoAI Research Discussion. University of Minnesota. February 10.
- 2021 “Tech in Planning” American Planning Association Central Coast Planning Academy. Online. April 7.
- 2020 “Discussion about Urban Streets Functionalities”. USC Prison Education Project Faculty Forum. Online. October 16.
- 2019 “Discussion about Urban Streets Functionalities”. USC Prison Education Project Faculty Forum. California Institution for Men in Chino. November 16.
- 2019 “Generalizable Procedural Rules for TOD & Urban Allocations” (co-presentation with D. Wasserman). Brown Bag Talk at Spatial Sciences Institute. February 19.

**Interviews**

Duan, Leilei. Interviewed by Zbrog, Matt. (2020) How GIS Analysis are Using Maps to Help Cities During COVID-19 and Beyond. Online Engineering Programs

Article link: <https://www.onlineengineeringprograms.com/features/urban-gis-analysts>

**TEACHING EXPERIENCE**

**Current Courses Taught**

*University of Southern California, Los Angeles*

SSCI 581 Concepts for Spatial Thinking (hybrid modality with DEN (Distance Education Network)) Summer 2022

**Past Courses Taught**

*University of Southern California, Los Angeles*

*Undergraduate Courses*

SSCI 135g Maps in Digital World Spring 2022, Spring 2021

SSCI 201 Principles of Geodesign (course redesigned in Fall 2019)	Spring 2022, Fall 2021, Spring 2021, Fall 2020, Spring 2020, Fall 2019
SSCI 313 Global Geodesign and Stakeholder Engagement (new course created in Fall 2020)	Fall 2021, Fall 2020
SSCI 402 Geospatial Technology Management for Sustainability Science (new course created in Fall 2020)	Fall 2021, Fall 2020

*Graduate Courses*

SSCI 572 GIS and Landscape Architecture (new course created in Fall 2020)	Fall 2021, Fall 2020
SSCI 581 Concepts for Spatial Thinking (residential and online session)	Spring 2020, Summer 2021
SSCI 585 Geospatial Technology Project Management	Summer 2021

*University of Florida, Gainesville*

URP 4230 3D Modeling, Visualization and Simulation (new course created in Fall 2017)	Fall 2017
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**Labs and Discussion Instructor**

*University of Southern California, Los Angeles*

SSCI 265 Water Planet	Spring 2022, Fall 2019, Spring 2019
SSCI 301 Maps and Spatial Reasoning	Fall 2019, Fall 2018
SSCI 401 Geospatial Intelligence	Fall 2019, Fall 2018
SSCI 382L Principles of Geographic Information Science	Spring 2019
SSCI 383L Geospatial Modeling and Customization	Spring 2019
SSCI 214g Human Populations and Natural Hazards	Fall 2018

**Teaching Assistant**

*University of Florida, Gainesville*

LAA 6656/ URP 6341 Environmental Design and Planning Practicum (Geodesign)	Spring 2018
URP 6272 Spatial Analysis	Spring 2018, Spring 2017, Spring 2016
URP 6905 Urban Coastal Analysis	Fall 2017
URP 6872 Planning & Design II	Spring 2017
URP 6905 Geodesign Studio	Fall 2016
URP 6905 3D Geospatial Urban Modeling & Visualization	Fall 2016
URP 6871 Planning & Design I	Fall 2015, Fall 2016

**Dissertations and Thesis Committee Served****Committee Chair***University of Southern California, Los Angeles**MS in Geographic Information Science and Technology*

- 2022 Jerome Wu. Accessibility of Community Resources and the Migratory Response of the Homeless Community in Los Angeles.
- 2021 Ariana Kim. Environmental Justice and Studying Correlation of Lead Toxicity with Various Social Indicators: A Case Study of Milwaukee.

**Committee Member***University of Southern California, Los Angeles**MS in Geographic Information Science and Technology*

- 2021 Chelsea Valenzuela. The Inequitable Distribution of Superfund Sites in Northern California.
- 2021 Andre McClure. Suitable California Opportunity Zone (COZ) Locations for Affordable Housing Development in the Cities of Bakersfield, Los Angeles, and Palmdale.
- 2020 Emily Bartee. Roadway Hazard Analysis: A Safe Ride for Motorcycles
- 2020 Amanda Cuesta. Filling in the Gaps: 3D Mapping Arizona's Basin and Range Aquifer in the Prescott Active Management.
- 2020 Alexander Toy. Angeles Hike Finder: Creating a Spatial Database and Web Application to Discover Hikes Based on Attributes and Difficulty.
- 2020 Rebecca Wilson. Alaska Hike Search: Designing a mapping application for Alaskan trails and user contributed hazards.

**PROFESSIONAL SERVICE***University of Southern California, Los Angeles*

- 2021 - present Vice President of the Nu Theta Chapter of Gamma Theta Upsilon
- 2021 - 2022 USC Dornsife Faculty Council
- 2022 SSI M.S. GIST Thesis Awards Committee
- 2022 USC Esri EDC Student of The Year Award Committee
- 2021 USC Gateway Internship Program – mentor for Will Forker
- 2021 USC Geodesign Fellow – Fellow Selection Committee
- 2021 USC Esri EDC Student of The Year Award Committee
- 2020 Spatial Sciences Institute Merit Review Committee

2020 USC Geodesign Fellow – Fellow Selection Committee  
2020 USC Esri EDC Student of The Year Award Committee  
2020 SSI M.S. GIST Thesis Awards Committee  
2019 USC Geodesign Fellow – Fellow Selection Committee  
2019 USC Gateway Internship Program – mentor for Julie Ho

*University of Florida, Gainesville*

2016 – 2017 Esri Campus Ambassador

## **ACADEMIC REVIEWS**

Transactions in GIS  
European Journal of Educational Research  
Oxford Research Encyclopedia of Global Public Health

## **PROFESSIONAL SOCIETY MEMBERSHIPS**

Gamma Theta Upsilon Honor Society  
American Planning Association (APA)  
Association of American Geographers (AAG)  
Association of Collegiate Schools of Planning (ACSP)

## **SKILLS AND METHODS**

### **Statistical and Computational Methods**

Multivariate statistics, data mining, data analysis with Python and R.

### **Three-dimensional Modeling Methods**

Computer Generated Architecture (CGA) language creation and editing, CityEngine, SketchUp, 3D GIS.

### **Web Developing Methods**

HTML5, CSS

### **Geospatial Method**

GIS, spatial analysis and modeling

### **Language Skills**

Fluent in English and Chinese.

Last Updated July 2022