

# RUOYU LI

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NYU M.S. Urban Data Science student, research assistant, and DarkSky International Data Analysis and Social Impact Intern. Advocate for light pollution control and responsible outdoor lighting.

**Research Interests:** Policy-oriented environmental research; nighttime light remote sensing; spectral image analysis (multi- and hyperspectral); spatiotemporal data analytics; environmental justice; community well-being.

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## SKILLS

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Remote Sensing (Nighttime Light, Multi-/Hyperspectral Imaging, LiDAR) | Spatiotemporal Data Analytics & Visualization | Public Policy Research, Analysis & Evaluation | Causal Inference | Machine Learning & GeoAI | Network Science | Information Science | Web Development

**Tools:** Python (Jupyter, GeoPandas, Rasterio, scikit-learn, PyArrow, Folium) | R | Google Earth Engine | ArcGIS Pro | QGIS | CloudCompare | Git/GitHub | Conda | HTML/CSS/JavaScript | Leaflet | Tableau

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## EDUCATION

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**New York University, New York, NY | Expected May 2026**

- **MS, Urban Data Science**, Center for Urban Science and Progress (CUSP), Tandon School of Engineering
- **Honors**: Tandon's highest merit scholarship | CUSP Experiential Scholars
- **Capstone**: Urban Colocation Intelligence: Mapping Amenity Clusters and Dependency Networks Using Open-Source POI Data (Project Sponsor: Foster + Partners)
- **Selected Activities**: American Society for Photogrammetry and Remote Sensing (ASPRS) NYU Chapter (Founding Treasurer) | NYC Geospatial Information Systems and Mapping Organization (GISMO) (GeoAI Committee) | Tandon Vertically Integrated Projects (VIP) Urban Remote Sensing Team (Hyperspectral Image Analysis) | Public Data Challenge (Finalist) | Global Data Dive (3rd Place) | Tandon Capstone Competition (Selected) | NYU GIS Day 2025 Mapping Competition (2nd Place) | NYC Open Data Week 2026 (Workshop Host)
- **Volunteers**: Climate Week NYC | World Environment Day | NYC School of Data | CityCamp NYC

**Columbia University, New York, NY | Jul 2021**

- **Graduate Certificate in Advanced Business**

**University of Arizona, Tucson, AZ | May 2019**

- **BS, Mathematics | BS, Information Science and Technology**
- **Minors**: Statistics and Data Science | Finance | Computer Science
- **Certificate**: Entrepreneurship and New Venture Development
- **Honors**: Academic Distinction | Dean's List with Distinction | Dean's List | Director's List
- **Selected Activities**: Arizona Chinese Culture Club (Co-founder & VP) | Association of Chinese Students and Scholars (Marketing Director) | McGuire New Venture Development Program (Finalist)

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## EXPERIENCES

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**New York University, New York, NY**

*Graduate Research Assistant | Feb 2026 – Present*

- Part of the Urban Night Lighting Index research project sponsored by the NYU Goddard Impact Award that studies urban nighttime light pollution and its impacts on human health.
- Leading the quantification of urban outdoor lighting at the census tract level using nighttime light satellite imagery and field-collected data; leading the field data collection.
- Analyzing the correlation of outdoor lighting with negative public health outcomes.

## **DarkSky International, Tucson, AZ**

*Data Analysis and Social Impact Intern | Feb 2026 – Present*

- Working on a foundational assessment of the International Dark Sky Places (IDSP) program's impact through lighting policy compliance analysis, sky-quality submissions, and open data on nighttime brightness.

## *New York State & Beijing Chapter Leader | Mar 2015 – Present*

- Led advocacy efforts for light pollution control in New York State and China.
- Helped establish multiple International Dark Sky Places in China.

## *Information Technology Manager & Regional Engagement Associate | Oct 2023 – Aug 2024*

- Managed IT infrastructure to improve efficiency; provided support for staff and advocates.
- Enhanced regional engagement and developed DarkSky's China strategy.

## **China Academy of Urban Planning and Design, Shenzhen, China**

*Intern (Research Center for Urban Lighting Planning and Design) | Nov 2023 – Jan 2024*

- Contributed to citywide lighting master plans and participated in public lighting art installation projects.
- Co-authored the *Urban and Rural Dark Sky Places Planning Standards*.

## **Eco Green Recycle Corp., San Juan, Puerto Rico**

*Co-President | Aug 2019 – Aug 2023*

- Supervised daily operations; employed data-driven strategies to enhance production & financial performance.

## **National Museum of Mathematics, New York, NY**

*Intern | Jun 2018 – Aug 2018*

- Alternated between roles in administration, museum docent, and retail assistant.

## **Arizona/NASA Space Grant Consortium, Tucson, AZ**

*Research Intern (ASCEND! Program) | Sep 2014 – May 2016*

- Member of a statewide aerospace student program, design, build, fly, recover, and analyze small payloads with multiple sensors and cameras for launch from high-altitude (~100,000 ft) weather balloons.

## **National Astronomical Observatories (NAOC), Chinese Academy of Sciences (CAS), Beijing, China**

*Research Intern | Jun 2015 – Jul 2015*

- Participated in a sky survey research project, learned data processing, and studied professional telescope operations on-site.

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## **SELECTED PROJECTS**

### **In progress:**

- The Causal Effect of Municipal Lighting Policy on Nighttime Brightness — *Built a spatiotemporal nighttime-brightness dataset from satellite imagery; applied causal inference methods to evaluate policy impacts.*
- Automated Hyperspectral Assessment of Sidewalk Pavement Conditions — *Preprocessed hyperspectral imagery with QGIS and clipped using NYC's planimetric map; trained machine learning models with Python to classify and visualize sidewalk pavement conditions based on spectral signature.*
- Greener NYC: A Spatial Analysis of Urban Green Spaces and Public Health Outcomes — *Computed green space indicators from land cover raster data; performed census-tract-level zonal statistics and spatial correlation analysis on public health open data; mapped disparities.*
- Characterizations of International Dark Sky Communities in the U.S. — *Derived nighttime-light exposure metrics for designated communities; integrated socioeconomic + public health open data; produced ArcGIS StoryMaps to support benchmarking and policy evaluation.*

- Urban Colocation Intelligence: Mapping Amenity Clusters and Dependency Networks (NYU Capstone; Sponsor: Foster + Partners) — *Cleaned and harmonized large-scale POI/mobility data of London; clustered amenities and built dependency networks; packaged methods into a reusable toolkit for urban design workflows.*

#### **Completed:**

- Urban nighttime spectral responses and multi-species risk assessment based on SDGSAT-1 glimmer imagery — *Integrated SDGSAT-1 nighttime imagery with field-collected ground-based measurements; built multispectral inversion and urban-scale spectral response index models with robust validation.*
- Light Pollution Indicator Weighted by Urban Development Level — *Analyzed ground-based sky-quality data; linked measures with socioeconomic factors to develop weighted indicators for cross-city comparisons.*
- Hidden Exposure: Personal Air Pollution Monitoring Reveals Gaps in Public Urban Sensing Systems — *Collected personal air quality sensor data; modeled exposure patterns with machine learning; built interactive web maps (Folium/Leaflet) to highlight gaps in public monitoring.*
- Impact of COVID-19 on Urban Mobility: A Spatial Analysis of NYC Citi Bike Ridership Changes — *Built a spatiotemporal ridership dataset; quantified census-tract-level changes via spatial analysis/zonal statistics; contextualized patterns with public health indicators.*
- Map the NYC 2025 Primary & General Mayoral Election at the Election District (ED) Level (2nd Place, 2025 NYU GIS Day Mapping Competition) — *Scraped and processed election night results; built an ED-level interactive map; published a reproducible open-source workflow on GitHub.*
- Google Maps Timeline Data Viewer & Heatmap Visualization — *Built a web-based interactive location-history viewer and a heatmap viewer; released code as an open-source project.*
- Airport Heat Island: Phoenix, Dallas, and NYC — *Computed heat island metrics in Google Earth Engine; compared airport vs surrounding urban areas across cities for working and living conditions evaluation.*
- Awareness of Privately Owned Public Spaces (POPS) — *Evaluated POPS policy, public awareness, and public accessibility; mapped site distribution; synthesized findings into recommendations.*
- Implementing Advanced Catalytic Plastic Recycling Technology in New York City — *Developed a NYC-specific business case analysis; built a location selection model; assessed operational feasibility for implementation.*

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## **SELECTED PUBLICATIONS, PRESENTATIONS & ACTIVITIES**

#### **Publications:**

- Li, R., Liu, M., Long, T. F., Li, R., Jiao, F., Wang, Z., & Yuan, S. (n.d.). *Urban nighttime spectral responses and multi-species risk assessment based on SDGSAT-1 glimmer imagery* [Manuscript under review]. *Sustainable Cities and Society*.
- Li, R. (2022, June 20). Dark Sky State: Arizona, US, *Chinese National Astronomy*, 16(6), 30-33.

#### **Organizing / Planning / Hosting:**

- NYC Open Data Week workshop: Reclaiming the Night — Urban Light Pollution, Solutions, and Open Data, New York, NY, 2026
- Climate Week NYC x SEE the Future Forum: Entrepreneurship and Coalition-Building for Global Climate Action, New York, NY, 2025
- International Dark Sky Week x NYU: Mitigating Light Pollution & Rediscovering the Night, New York, NY, 2025
- Forum for the Dark and Quiet Sky Protection, International Year of Basic Sciences for Sustainable Development (IYBSSD), Hebei, China, 2023
- DarkSky Global Conference, Virtual, 2021 & 2023

#### **Media / Interviews:**

- Mancall-Bitel, N., & Moran, K. (2025, December 2). New York's Skyline Has a Bold New Look. *The New York Times*.

- Island Stars, 2025
- *News and Science*, Hunan TV, 2024
- Bi-City Biennale of Urbanism/Architecture (UABB) of Shenzhen and Hong Kong, 2022

**Invited Talks:**

- Ethical Night Rangers, New York Society for Ethical Culture, *New York, NY*, 2025-2026
- Dark Sky and Territorial Spatial Planning (class), Guangzhou University, *Guangdong, China*, 2025
- Brooklyn Heights Garden Club, *New York, NY*, 2025
- Guangdong-Hong Kong-Macao Greater Bay Area Dark Sky Astronomy Festival, *Guangdong, China*, 2024
- Yangzhou Urban Lighting Management Office, *Jiangsu, China*, 2023
- Ningbo Haishu District Government, *Zhejiang, China*, 2023
- Hangzhou High School, *Zhejiang, China*, 2023
- The Fifth Star Party of the Yangtze River Delta, *Zhejiang, China*, 2023
- Forum for the Dark and Quiet Sky Protection, IYBSSD, *Hebei, China*, 2023
- “Under One Sky” Live Event, UABB of Shenzhen and Hong Kong, *Guangdong, China*, 2022
- Academic Salon, Youth Innovation Promotion Association, NAOC, CAS, *Beijing, China*, 2022
- Student Seminar, National Astronomical Observatories (NAOC), CAS, *Beijing, China*, 2015

**Presentations / Posters / Lighting Talks / Showcases:**

- NYU GIS Day 2025 Mapping Competition, *New York, NY*, 2025
- CUSP Summer Research Showcase, *New York, NY*, 2025
- Tandon Capstone Showcase, *New York, NY*, 2025
- NYC Open Data Week x GISMO, *New York, NY*, 2025
- CUSP London Global Data Dive Showcase, *New York, NY*, 2025
- DarkSky Global Conference, *Phoenix, AZ*, 2015; *Tucson, AZ*, 2016; *Boston, MA*, 2017; *Salt Lake City, UT*, 2018
- Hack Arizona, *Tucson, AZ*, 2016