RUOYU LI

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NYU M.S. Urban Data Science student researcher 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.

SKILLS

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

EDUCATION

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)

EXPERIENCES

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.

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.*

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*