Shengjie Kris Liu

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Experience

Columbia University in the City of New York
Summer Fellow, 2025.

The University of Hong Kong
Research Assistant, 2019–2021.

Education

University of Southern California
Doctor of Philosophy, 2021–2026 (expected).

Sun Yat-Sen University
Bachelor of Science, 2015–2019.

Peer-Reviewed Papers

ORCiD: https://orcid.org/0000-0003-0253-7410
Google Scholar: https://scholar.google.com/citations?user=D2ZRcjQAAAAJ

[x] journals.   [x] proceedings[†].   [x] workshops[‡].

[30] *Comparing temperature datasets for small-area assessment of climate and health: A case study of diarrhea in New York City.*
Shengjie Kris Liu, Lu Zhang, and Siqin Wang.
Accepted to *GeoHealth*, 2026.

[29] *Using high-resolution nighttime satellite data to quantify light emissions in Hong Kong.*
Shengjie Kris Liu, Chu Wing So, Hung Chak Ho, Qian Shi, and Jason Chun Shing Pun.
Remote Sensing Applications: Society and Environment, 41, p. 101899, 2026.

[28] *Daily land surface temperature reconstruction in Landsat cross-track areas using deep ensemble learning with uncertainty quantification.*
Shengjie Liu, Siqin Wang, and Lu Zhang.
IEEE Transactions on Geoscience and Remote Sensing, 63, pp. 1–18, Art no. 5011018, 2025.

[27] *A novel and practical approach to generate all-weather 30-meter land surface temperature data.*
Shengjie Liu, Lu Zhang, and Siqin Wang.
IGARSS 2025—2025 IEEE International Geoscience and Remote Sensing Symposium, pp. 3260–3264, 2025[†].
(Student Paper Award [0.9%, 3/340+]).

[26] *Resolution revolution: A physics-guided deep learning framework for spatiotemporal temperature reconstruction.*
Shengjie Liu, Lu Zhang, and Siqin Wang.
ICCV 2025 Workshop SEA—International Conference on Computer Vision 2025 Workshop on Sustainability with Earth Observation & AI, Proceedings Track, 2025[†].

[25] *Spectroscopic study of the light-polluted night sky in Hong Kong.*
Chu-wing So, Jason Chun Shing Pun, and Shengjie Liu.
Journal of Quantitative Spectroscopy and Radiative Transfer, 348, p. 109696, 2025.

[24] *Natural experiments from Earth Hour reveal urban night sky being drastically lit up by few decorative buildings.*
Chu Wing So, Chun Shing Jason Pun, Shengjie Liu, Sze Leung Cheung, Ho Keung Kenneith Hui, Kelly Blumenthal, and Constance E. Walker.
Scientific Reports, 15, 21414, 2025.
(Reported in *Forbes*).

[23] *End-to-end reconstruction of high-resolution temperature data using physics-guided deep learning.*
Shengjie Liu, Lu Zhang, and Siqin Wang.
ICML 2025 Workshop Terrabytes—International Conference on Machine Learning 2025 Workshop TerraBytes: Towards global datasets and models for Earth Observation, 2025[‡].

[22] *Effects of urban green space on human cognition: A systematic search and scoping review.*
Shengjie Liu, Hung Chak Ho, and John P. Wilson.
Urban Climate, 60, p. 102372, 2025.

[21] *Analyzing nighttime lights using multi-temporal imagery from Luojia-1 and the International Space Station with in situ and land use data.*
Shengjie Kris Liu, Chu Wing So, and Chun Shing Jason Pun.
Remote Sensing, 17(22), p. 3739, 2025.

[20] *Analyzing the sources and variations of nighttime lights in Hong Kong from VIIRS monthly data.*
Shengjie Liu, Chu Wing So, and Chun Shing Jason Pun.
Remote Sensing, 17(8), p. 1447, 2025.

[19] *Racial and ethnic minorities disproportionately exposed to extreme daily temperature variation in the United States.*
Shengjie Liu, and Emily Smith-Greenaway.
PNAS Nexus, 3(5), p. pgae176, 2024.
(Featured in *PreventionWeb* [United Nations Office for Disaster Risk Reduction]).

[18] *Deep feature Gaussian processes for single-scene aerosol optical depth reconstruction.*
Shengjie Liu, and Lu Zhang.
IEEE Geoscience and Remote Sensing Letters, 21, pp. 1–5, Art no. 5505705, 2024.

[17] *Using time-series satellite imagery to detect artificial light at night: The case of Luojia-1 and International Space Station.*
Shengjie Kris Liu, Chu Wing So, and Jason Chun Shing Pun.
IGARSS 2024—2024 IEEE International Geoscience and Remote Sensing Symposium, pp. 1305–1308, 2024[†].

[16] *Fine-scale mapping of particulate matter using Landsat imagery and low-cost sensor data from PurpleAir: A case study of Los Angeles.*
Shengjie Kris Liu, and Siqin Wang.
IGARSS 2024—2024 IEEE International Geoscience and Remote Sensing Symposium, pp. 3850–3853, 2024[†].

[15] *Effects of socioeconomic status and greenspace on respiratory emergency department visits under short-term temperature variations: An age-stratified case time-series study.*

Shengjie Liu, and Hung Chak Ho.
Social Science & Medicine, 343, p. 116613, 2024.

[14] *Spatial variability of diurnal temperature range and its associations with local climate zone, neighborhood environment and mortality in Los Angeles.*
Shengjie Liu, An-Min Wu, and Hung Chak Ho.
Urban Climate, 49, p. 101526, 2023.

[13] *Using high-resolution nighttime remote sensing data to identify light sources in Hong Kong.*
Shengjie Liu, Chu Wing So, Hung Chak Ho, Qian Shi, and Chun Shing Jason Pun.
IGARSS 2023—2023 IEEE International Geoscience and Remote Sensing Symposium, pp. 2827–2830, 2023[†].

[12] *Using multisource data to capture the impacts of Earth Hour 2021: A case study of Hong Kong.*
Shengjie Liu, Chu Wing So, Xiang Feng Foo, and Chun Shing Jason Pun.
IGARSS 2023—2023 IEEE International Geoscience and Remote Sensing Symposium, pp. 2398–2401, 2023[†].

[11] *Multiple angle observations would benefit visible band remote sensing using night lights.*
Christopher CM Kyba, Martin Aubé, Salvador Bará, Andrea Bertolo, Constantinos A Bouroussis, Stefano Cavazzani, Brian R Espey, Fabio Falchi, Geza Gyuk, Andreas Jechow, Miroslav Kocifaj, Zoltán Kolláth, Héctor Lamphar, Noam Levin, Shengjie Liu, Steven D Miller, Sergio Ortolani, Chun Shing Jason Pun, Salvador José Ribas, Thomas Ruhtz, Alejandro Sánchez de Miguel, Matthias Schneider, Ranjay Man Shrestha, Alexandre Simoneau, Chu Wing So, Tobias Storch, Kai Pong Tong, Diane Turnshek, Ken Walczak, Jun Wang, Zhuosen Wang, and Jianglong Zhang.
Journal of Geophysical Research: Atmospheres, 127(12), p. e2021JD036382, 2022.
(Reported in *Science*).

[10] *Estimating PM2.5 and PM10 on Zhuhai-1 hyperspectral imagery.*
Shengjie Liu, and Qian Shi.
IGARSS 2022—2022 IEEE International Geoscience and Remote Sensing Symposium, pp. 5933–5936, 2022[†].

[9] *Crop mapping using Sentinel full-year dual-polarized SAR data and a CPU-optimized convolutional neural network with two sampling strategies.*
Shengjie Liu, Zhize Zhou, Huaxiang Ding, Yuanjun Zhong, and Qian Shi.
IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, 14, pp. 7017–7031, 2021.

[8] *Few-shot hyperspectral image classification with unknown classes using multitask deep learning.*
Shengjie Liu, Qian Shi, and Liangpei Zhang.
IEEE Transactions on Geoscience and Remote Sensing, 59(6), pp. 5085–5102, 2021.
(ESI Highly Cited Paper [1%]).

[7] *Active ensemble deep learning for polarimetric synthetic aperture radar image classification.*
Shengjie Liu[1], Haowen Luo[1], and Qian Shi. ([1]equal contribution)
IEEE Geoscience and Remote Sensing Letters, 18(9), pp. 1580–1584, 2021.

[6] *Analyzing long-term artificial light at night using VIIRS monthly product with land use data: Preliminary result of Hong Kong.*
Shengjie Liu, Chu Wing So, and Chun Shing Jason Pun.
IGARSS 2021—2021 IEEE International Geoscience and Remote Sensing Symposium, pp. 6821–6824, 2021[†].

[5] *Multi-label local climate zone mapping as scene classification using very high resolution imagery: Preliminary result of Hong Kong.*
Shengjie Liu, and Qian Shi.
IGARSS 2021—2021 IEEE International Geoscience and Remote Sensing Symposium, pp. 6809–6812, 2021[†].

[4] *Local climate zone mapping as remote sensing scene classification using deep learning: A case study of metropolitan China.*
Shengjie Liu, and Qian Shi.
ISPRS Journal of Photogrammetry and Remote Sensing, 164, pp. 229–242, 2020.

[3] *Multitask deep learning with spectral knowledge for hyperspectral image classification.*
Shengjie Liu, and Qian Shi.
IEEE Geoscience and Remote Sensing Letters, 17(12), pp. 2110–2114, 2020.

[2] *Integration of convolutional neural networks and object-based post-classification refinement for land use and land cover mapping with optical and SAR data.*
Shengjie Liu, Zhixin Qi, Xia Li, and Anthony Gar-On Yeh.
Remote Sensing, 11(6), p. 690, 2019.

[1] *Wide contextual residual network with active learning for remote sensing image classification.*
Shengjie Liu, Haowen Luo, Ying Tu, Zhi He, and Jun Li.
IGARSS 2018—2018 IEEE International Geoscience and Remote Sensing Symposium, pp. 7145–7148, 2018[†].

Preprints

[1] *Uncertainty-aware hourly air temperature mapping at 2 km resolution via physics-guided deep learning.*
Liu et al.
Revision requested and submitted. Preprint available upon request.

Conference Abstracts

[4] *The opportunity cost of 2023 Canadian wildfires.*
Shengjie Liu, Brycen Lynch, Kaleb Florence, and Ensheng Weng.
AGU Annual Meeting 2025, New Orleans, LA, December 2025

[3] *Forest dynamics in South America under a changing climate: An analysis using ModelE-BiomeE with ERA5.*
Brycen Lynch, Shengjie Liu, Kaleb Florence, and Ensheng Weng.
AGU Annual Meeting 2025, New Orleans, LA, December 2025

[2] *Detecting nonlinear causal relationships between El Niño and soil moisture in tropical forests.*
Kaleb Florence, Shengjie Liu, Brycen Lynch, Juan Nathaniel, Carla Roesch, and Ensheng Weng.
AGU Annual Meeting 2025, New Orleans, LA, December 2025

[1] *Disparities in daily temperature variation exposure across U.S. population and income groups.*
Shengjie Liu.
AGU Annual Meeting 2024, Washington, DC, December 2024.

Advising

Brycen Lynch, Columbia University LEAP Summer REU Program, 2025.
Kaleb Florence, Columbia University LEAP Summer REU Program, 2025.

Teaching

UNIVERSITY OF SOUTHERN CALIFORNIA

The Water Planet, Spring 2025: Lab-discussion sections (redesigned 50% materials).
Human Populations and Natural Hazards, Fall 2024: Discussion sections (redesigned 70% materials).
Spatial Data Collection Using Drones, Spring 2023: Lab sections (redesigned 5% materials).
Geographic Information Science: Spatial Analytics, Spring 2023: Lab sections (redesigned 5% materials).
Sustainability Science in the City, Fall 2022: Lab-discussion sections (redesigned 5% materials).

Invited Talks & Guest Lectures

New York University, New York, NY. July 2025.
    Advancing sustainability with satellite data and computing: climate and health.
University of Southern California, Los Angeles, CA. March 2025.
    Remote sensing beyond RGB: Application of radar and thermal imaging.
University of Southern California, Los Angeles, CA. September 2024.
    Advancing sustainability using satellite data and computing: health applications.
University of Southern California, Los Angeles, CA. October 2022.
    Urban heat islands with nighttime and daytime Landsat imagery.

Service & Professional Activities

Technical Program Committee: IEEE IGARSS [2025–2026] .
Session Chair: IEEE IGARSS [2023–2025].
Scientific Committee: IEEE IGARSS [2023–2026].
Ad Hoc Reviewer: *Remote Sensing of Environment, IEEE Transactions on Geoscience and Remote Sensing (TGRS), IEEE Geoscience and Remote Sensing Letters (GRSL), IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (J-STARS), International Journal of Applied Earth Observation and Geoinformation, IEEE International Geoscience and Remote Sensing Symposium (IGARSS), International Journal of Remote Sensing, Remote Sensing Letters, Remote Sensing, ISPRS International Journal of Geo-Information, AI, Expert Systems With Applications, Knowledge-Based Systems, Pattern Recognition Letters, International Conference on Learning Representations (ICLR), Earth Science Informatics, Environmental and Earth Sciences Proceedings, International Journal of Digital Earth, Journal of Asian Architecture and Building Engineering, Processes, CivilEng, World Electric Vehicle Journal, Infrastructures, Challenges, Sustainable Cities and Society, Next Sustainability, Case Studies in the Environment, Forests, Urban Climate, Urban Science, Atmosphere, Journal of Urban Management, Regional Studies in Marine Science, Environmental Research, Emergency and Critical Care Medicine, International Journal of Biometeorology, Environmental Research: Infrastructure and Sustainability, Environmental Research Communications, Environmental Research: Health, Scientific Reports*.

Honors & Awards

IEEE Geoscience and Remote Sensing Society Student Paper Award [0.9%, 3/340+], 2025.
NSF STC LEAP Summer Momentum Fellowship at Columbia University, 2025.
Climate and Health Science Communication Award Finalist, 2024.
AGU Michael H. Freilich Data Visualization Competition Runner-up Winner, 2024.
USC Dornsife PhD Academy Scholarship, 2022–2025.

IEEE Geoscience and Remote Sensing Society Travel Grant [2018, 2024, 2025].
GitHub Arctic Code Vault Contributor, 2020.
Orbita Cup Hyperspectral Image Processing Paper Competition Second Place, 2019.
SYSU EMBA Alumni Association Scholarship, 2018.
Sun Yat-Sen University First-class Scholarship, 2018.

Selected Media Coverage

BBC, Forbes, United Nations Office for Disaster Risk Reduction, Smithsonian Magazine, Natural History Museum, The Conversation, USC News, HKU News, RTHK, Fast Company, Medical Xpress, Macau Daily Times, Science News, and Le Monde.

Additional

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