SHENGJIE KRIS LIU

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Research Remote Sensing, Machine Learning, AI for Earth, Urban Climate, Artificial Light at Night

Education & Training

🎓 **University of Southern California** 8/2021 – present
PhD in Population, Health and Place

🎓 **The University of Hong Kong** 10/2019 – 8/2021
RA of Artificial Light at Night

🎓 **Sun Yat-Sen University** 8/2015 – 6/2019
BSc in Geographical Information Science

Publications

Articles in peer-reviewed journals

[19] Racial and Ethnic Minorities Disproportionately Exposed to Extreme Daily Temperature Variation in the United States
Shengjie Liu, Emily Smith-Greenaway
PNAS Nexus 2024

[18] Deep Feature Gaussian Processes for Single-Scene Aerosol Optical Depth Reconstruction
Shengjie Liu, Lu Zhang
IEEE GRSL – IEEE Geoscience and Remote Sensing Letters 2024

[17] 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, Hung Chak Ho
Social Science & Medicine 2024

[16] 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, Hung Chak Ho
Urban Climate 2023

[15] 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, Jianglong Zhang
JGR Atmospheres – Journal of Geophysical Research: Atmospheres 2022

[14] 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, Qian Shi
IEEE J-STARS – IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing 2021

[13] Few-shot Hyperspectral Image Classification with Unknown Classes Using Multitask Deep Learning
Shengjie Liu, Qian Shi, Liangpei Zhang
IEEE TGRS – IEEE Transactions on Geoscience and Remote Sensing 2021
🏆 **ESI Highly Cited Paper**

[12] Active Ensemble Deep Learning for Polarimetric Synthetic Aperture Radar Image Classification
Shengjie Liu, Haowen Luo, Qian Shi
IEEE GRSL – IEEE Geoscience and Remote Sensing Letters 2021

[11] Local Climate Zone Mapping as Remote Sensing Scene Classification Using Deep Learning: A Case Study of Metropolitan China
Shengjie Liu, Qian Shi
ISPRS Journal of Photogrammetry and Remote Sensing 2020

[10] Multitask Deep Learning With Spectral Knowledge for Hyperspectral Image Classification
Shengjie Liu, Qian Shi
IEEE GRSL – IEEE Geoscience and Remote Sensing Letters 2020

[9] 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, Anthony Gar-On Yeh
Remote Sensing 2019

Articles in peer-reviewed conference proceedings

[8] 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, Jason Chun Shing Pun
IGARSS – IEEE International Geoscience and Remote Sensing Symposium 2024
🎤 oral presentation

[7] 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, Siqin Wang
IGARSS – IEEE International Geoscience and Remote Sensing Symposium 2024
🎤 oral presentation

[6] Using high-resolution nighttime remote sensing data to identify light sources in Hong Kong
Shengjie Liu, Chu Wing So, Hung Chak Ho, Qian Shi, Chun Shing Jason Pun
IGARSS – IEEE International Geoscience and Remote Sensing Symposium 2023
🎤 oral presentation

[5] 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, Chun Shing Jason Pun
IGARSS – IEEE International Geoscience and Remote Sensing Symposium 2023
🎤 oral presentation

[4] Estimating PM2.5 and PM10 on Zhuhai-1 hyperspectral imagery
Shengjie Liu, Qian Shi
IGARSS – IEEE International Geoscience and Remote Sensing Symposium 2022
🎤 oral presentation

[3] 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, Chun Shing Jason Pun
IGARSS – IEEE International Geoscience and Remote Sensing Symposium 2021

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

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

Abstracts in peer-reviewed conferences
presenter marked with *

[A9] Disparities in Daily Temperature Variation Exposure Across U.S. Population and Income Groups
Shengjie Liu*
Submitted to *AGU – American Geophysical Union Annual Meeting* 2024

[A8] High inequality of artificial light due to commercial and sports lighting in Hong Kong
Shengjie Liu*, Chu Wing So, Hung Chak Ho, Qian Shi, Chun Shing Jason Pun
ALAN – International Conference on Artificial Light At Night 2023
🎤 oral presentation

[A7] Association between indoor lux measurements and outdoor wall brightness in the high-rise urban environment of Hong Kong
Chu Wing So*, **Shengjie Liu**, Chun Shing Jason Pun
ALAN – International Conference on Artificial Light At Night 2023
🎤 oral presentation

[A6] Using multi-source data to capture the impacts of Earth Hour 2021 in Hong Kong
Chun Shing Jason Pun*, Chu Wing So, Xiang Feng Foo, **Shengjie Liu**
ALAN – International Conference on Artificial Light At Night 2023

[A5] Measurement of cloud amplification effect over a wide range of night sky brightness observations with the GaN-MN
Chun Shing Jason Pun, Chu Wing So*, **Shengjie Liu**, Lina Canas, Constance E. Walker, Sze Leung Cheung
LPTMM – Light Pollution: Theory, Modelling and Measurements International Conference 2022

[A4] Analyzing the sources and variations of night lights between 2012 and 2019 in Hong Kong from VIIRS monthly products
Chun Shing Jason Pun, Chu Wing So, **Shengjie Liu***
LPTMM – Light Pollution: Theory, Modelling and Measurements International Conference 2022
🎤 oral presentation

[A3] The relationship between night sky brightness and remote sensing data: Preliminary result from Luojia-1 and the International Space Station
Shengjie Liu*, Chu Wing So, Chun Shing Jason Pun
ALAN – International Conference on Artificial Light At Night 2021
🎤 oral presentation

[A2] A multinational study of night sky brightness (NSB) patterns: Preliminary results from the Globe at Night – Sky Brightness Monitoring Network (GaN-MN) – Study of cloud amplification on NSB
Chu Wing So*, Nok Yan Janet Chang, **Shengjie Liu**, Lina Canas, Constance E. Walker, Sze Leung Cheung, Chun Shing Jason Pun
ALAN – International Conference on Artificial Light At Night 2021
🎤 oral presentation

[A1] A multinational study of night sky brightness patterns: Preliminary results from the Globe at Night – Sky Brightness Monitoring Network (GaN-MN)
Chun Shing Jason Pun*, Chu Wing So, Nok Yan Janet Chang, **Shengjie Liu**, Lina Canas, Constance E. Walker, Sze Leung Cheung
ALAN – International Conference on Artificial Light At Night 2020
🎤 oral presentation

Invited Talks & Guest Lectures	University of Southern California: Spatial Sciences Institute Brown Bag Series *Advancing sustainability using satellite data and computing: health applications*	9/2024
	The University of Hong Kong: Advanced Urban Remote Sensing Workshop *Disproportionate distribution of artificial light at night in Hong Kong: evidence from space with high-resolution nighttime remote sensing*	12/2022
	University of Southern California, SSCI-382 Guest Lecture SSCI-382 Geographic Information Science: Spatial Analytics. *Urban Heat Islands with Nighttime and Daytime Landsat Imagery*	10/2022
	East China Normal University, Shanghai: The 3rd Urban Remote Sensing Workshop *Two cases of deep learning remote sensing image classification: local climate zone mapping and fine-grained classification considering unknown classes*	10/2020

Awards, Fellowships & Grants	USC Spatial Sciences Institute Travel Grant 2024	7/2024
	2024 Dornsife PhD Academy Scholarship	5/2024

IEEE IGARSS 2024 Travel Grant	4/2024
2023 Dornsife PhD Academy Scholarship	5/2023
2022 Dornsife PhD Academy Scholarship	5/2022
USC Spatial Sciences Institute Fellowship for Incoming Students	08/2021 – 05/2026
Stipend for 6 months	
USC Dornsife College/Graduate School Fellowship for Incoming Students	08/2021 – 05/2026
Stipend for 18 months	
Finalists, Top-5, IEEE GRSS Data Fusion Contest 2020	3/2020
Global land cover mapping with weak supervision	
⌗ GitHub Arctic Code Vault Contributor	2/2020
Finalists, Zhuhai Orbita Hyperspectral Data Processing Paper Contest	11/2019
Top-20 (1.5%), Alibaba Cloud German AI Challenge 2018: AI For Earth Observation	2/2019
IEEE IGARSS 2018 Travel Grant	4/2018
SYSU EMBA Alumni Association Scholarship	6/2018
National Undergraduate Innovative Project	6/2018
First-class Fellowship for Outstanding Undergraduates	6/2018

Funded Research Projects

Participated Funded Projects (paid my salary)

NIH - National Institute of Environmental Health Sciences (P30ES007048) Subcontract via Southern California Environmental Health Sciences Center *Assessing Particulate Matter Exposures Based on Multi-Source Satellite* *Data Using Scalable Gaussian Process Models* (PI: Lu Zhang)	8/2023 – 5/2024
Environment and Conservation Fund of Hong Kong Government *Effects of external lighting on the environment* (2018-125, PI: Jason C.S. Pun)	10/2019 – 8/2021
HKU Knowledge Exchange Fund, University Grants Committee of Hong Kong Grant No. KE-IP-2019/20-54, KE-IP-2020/21-78 (PI: Jason C.S. Pun)	10/2019 – 8/2021
Guangdong Basic and Applied Basic Research Foundation Grant No. 2019A1515011057 (PI: Qian Shi)	1/2019 – 9/2019
National Natural Science Foundation of China Grant No. 61601522, 61976234 (PI: Qian Shi)	9/2018 – 9/2019

Teaching

University of Southern California

SSCI-214 Human Populations and Natural Hazards *Instructor of Record for discussion sessions*	Fall 2024
SSCI-382 Geographic Information Science: Spatial Analytics *Instructor of Record for lab sessions*	Spring 2023
SSCI-220 Spatial Data Collection Using Drones *Instructor of Record for lab sessions*	Spring 2023
SSCI-165 Sustainability Science in the City *Instructor of Record for lab sessions*	Fall 2022

Service & Membership

Journal editorship

Topic Coordinator in Frontiers in Environmental Science
    Navigating the Night: Insights into Technology, Ecology, and Public Perception of Artificial Light
    with Zhuosen Wang, Xi Li, and Alejandro Sánchez de Miguel

Conference organization

Scientific Committee, IGARSS 2024
Session Chair, with Zhuosen Wang, IGARSS 2024
    Nighttime Light Remote Sensing for Sustainable Development Goals
Session Chair, with Jie Feng, IGARSS 2023
    Hyperspectral Imaging Classification

Peer-review referee

IEEE Transactions on Geoscience and Remote Sensing (7)
IEEE Geoscience and Remote Sensing Letters (2)

IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (19)
Remote Sensing Letters (3)
Expert Systems With Applications (2)
Knowledge-Based Systems (6)
Pattern Recognition Letters (5)
Earth Science Informatics (2)
International Journal of Digital Earth (2)
Journal of Asian Architecture and Building Engineering (4)
Sustainable Cities and Society (1)
Urban Climate (18)
International Journal of Biometeorology (1)
Environmental Research (2)
Scientific Reports (2)
Membership
American Geophysical Union (AGU)
European Geosciences Union (EGU)
IEEE Geoscience and Remote Sensing Society (GRSS)
IEEE GRSS Image Analysis and Data Fusion (IADF) Technical Committee

Open Science

MDL4OW – Multitask deep learning for open-world hyperspectral image classification — 9/2020 –
50+ stars on GitHub. First open-set classification method in remote sensing.
Baseline method in 20+ published papers.
 https://github.com/sjliu68/MDL4OW

LCZNet – Local climate zone mapping in metropolitan China — 4/2020 –
Local climate zone maps in the Greater Bay Area (including Hong Kong, Guangzhou, Shenzhen, and Macau), Shanghai, Beijing.
 https://sjliu.me/lcz

Remote Sensing Image Classification — 8/2019 –
100+ stars on GitHub.
Baseline method implementation for classic remote sensing image classification, including Contextual CNN (IEEE TIP), WCRN (IEEE GRSL), OBPR, DBMA, and HResNet (IEEE TGRS).
 https://github.com/sjliu68/Remote-Sensing-Image-Classification

Science Outreach & Selected Media Coverage

The Conversation: *Large daily temperature swings can harm human health* — 8/2024
Covered by United Nations PreventionWeb, Fast Company, Medical Xpress, Yahoo News, MSN-Microsoft, USC Dornsife, Tolerance Webzine Canada, Inverse, SFGATE San Francisco, Qatar Tribune, Macau Daily Times, Foreign Affairs New Zealand.

USC Dornsife: *Extreme temperature swings hit minority, low-income communities hardest* — 5/2024
Covered by Yahoo News, MSN-Microsoft, RAI Bolivia.

Science Magazine: *Light pollution is drowning the starry night sky faster than thought* — 1/2023
Covered by Smithsonian Magazine, Science News, Tech Times, The Daily Beast, Le Monde.

Radio Television Hong Kong (RTHK): *Light Pollution Hong Kong* — 10/2020
Featured in Talk Show –- Science Night

— Last updated in September 2024