SHENGJIE KRIS LIU

CURRICULUM VITAE

PhD Candidate
University of Southern California
3616 Trousdale Pkwy, AHF B55
Los Angeles, CA 90089

liusheng@usc.edu
skrisliu@gmail.com
https://github.com/sjliu68
https://skrisliu.com

Research

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

Education & Training

University of Southern California 08/2021 – present
PhD in Population, Health and Place
Thesis: *Bayesian Deep Learning to Generate Temperature Data at High Spatiotemporal Resolution*

The University of Hong Kong 10/2019 – 08/2021
RA of Artificial Light at Night, Department of Physics

Sun Yat-Sen University 08/2015 – 06/2019
BSc in Geographical Information Science
Thesis: *Deep Learning for Land Use and Land Cover Classification*

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
Accepted to ***PNAS Nexus*** *2024*
Code and data at https://skrisliu.com/dtvus

[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*
Code and data at https://skrisliu.com/dfgp

[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
Code and data at https://sjliu.me/MDL4OW

[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*
Code at https://sjliu.me/lcz

[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*
Code and data at https://github.com/sjliu68/Remote-Sensing-Image-Classification

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
Accepted to ***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
Accepted to ***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] Generating the Hong Kong night light map with one-meter resolution satellite imagery
Shengjie Kris Liu, Chu Wing So*, Chun Shing Jason Pun
Accepted to ***LPTMM*** *– Light Pollution: Theory, Modelling and Measurements International Conference 2024*
oral presentation

[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
Liu, Shengjie*, 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

The University of Hong Kong, Advanced Urban Remote Sensing Workshop 12/2022
Disproportionate distribution of artificial light at night in Hong Kong: evidence from space with high-resolution nighttime remote sensing

University of Southern California 10/2022
SSCI-382 Geographic Information Science: Spatial Analytics. *Urban Heat Islands with Nighttime and Daytime Landsat Imagery*
East China Normal University, The 3rd Urban Remote Sensing Workshop, Shanghai 10/2020
Two cases of deep learning remote sensing image classification: local climate zone mapping and fine-grained classification considering unknown classes

Awards & Scholarships

2023 Dornsife PhD Academy Scholarship 2023
2022 Dornsife PhD Academy Scholarship 2022
USC Spatial Sciences Institute Fellowship for Incoming Students 08/2021 – 05/2026
(Stipend for 2 Summers)
USC Graduate School Fellowship for Incoming Students 08/2021 – 05/2026
(Stipend for 2 Academic Years)
Arctic Code Vault Contributor, GitHub 2020
Finalist, Zhuhai Orbita Hyperspectral Data Processing Paper Contest 2019
IEEE IGARSS 2018 Travel Grant 2018
SYSU EMBA Alumni Association Scholarship 2018
National Undergraduate Innovative Project 2018
First-class Fellowship for Outstanding Undergraduates 2018

Research projects

Participated funded projects (paid my salary/stipend)
Southern California Environmental Health Sciences Center Pilot Project (PI: Lu Zhang) 2023
Environment and Conservation Fund of the Hong Kong Government 2019 – 2021
Effects of external lighting on the environment (2018-125, PI: Jason C.S. Pun)
HKU Knowledge Exchange Fund, University Grants Committee of Hong Kong 2019 – 2021
(KE-IP-2019/20-54, KE-IP-2020/21-78; PI: Jason C.S. Pun)
Guangdong Basic and Applied Basic Research Foundation 2019
(2019A1515011057; PI: Qian Shi)
National Natural Science Foundation of China 2018 – 2019
(61601522, 61976234; PI: Qian Shi)

Teaching

University of Southern California
SSCI-382 Geographic Information Science: Spatial Analytics, Sp 2023 (Lab instructor)
SSCI-220 Spatial Data Collection Using Drones, Spring 2023 (Lab instructor)
SSCI-165 Sustainability Science in the City, Fall 2022 (Lab instructor)

Service & Membership

Journal
Topic Coordinator, Frontiers in Environmental Science, "Navigating the Night: Insights into Technology, Ecology, and Public Perception of Artificial Light"

Conference
IGARSS 2024, Scientific Committee
IGARSS 2024, Session Chair, Nighttime Light Remote Sensing for Sustainable Development Goals
IGARSS 2023, Session Chair, Hyperspectral Imaging Classification

Journal reviewer
IEEE Geoscience and Remote Sensing Letters (2)
IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (15)
IEEE Transactions on Geoscience and Remote Sensing (6)
Remote Sensing Letters (3)
Expert Systems With Applications (1)
Knowledge-Based Systems (6)
Pattern Recognition Letters (4)
Earth Science Informatics (1)
International Journal of Digital Earth (2)
Journal of Asian Architecture and Building Engineering (3)

Urban Climate (16)
Scientific Reports (2)

Membership
American Geophysical Union (AGU)
Atmospheric Environmental Remote Sensing Society
European Geosciences Union (EGU)
IEEE Geoscience and Remote Sensing Society (GRSS)
IEEE GRSS Image Analysis and Data Fusion (IADF) Technical Committee

— Last updated in May 2024