# Liu, Shengjie Kris

University of Southern California
3616 Trousdale Pkwy, AHF B55
Los Angeles, CA 91755, USA

Email 1: skrisliu@gmail.com
Email 2: liusheng@usc.edu
URL: http://skrisliu.com

## Current position

*Doctoral Student*, University of Southern California

## Areas of specialisation

1. Remote sensing: hyperspectral, PolSAR, AI for Earth
2. Machine learning: convolutional neural network, few-shot, open-set recognition
3. Artificial light at night

## Appointments held

2019-2021 Research Assistant (Department of Physics), The University of Hong Kong
2019 Remote Sensing Engineer, OneSpace Technology Co Ltd

## Education

2021- PhD in *Population, Health and Place*, University of Southern California
2021- MS in *Biostatistics*, University of Southern California
2019 BSc in *Geographical Information Science (Remote Sensing)*, Sun Yat-Sen University

## Publications & talks

### Journal articles

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

2022 Kyba, Christopher CM, 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 (2022). Multiple Angle Observations Would Benefit Visible Band Remote Sensing Using Night Lights. *Journal of Geophysical Research: Atmospheres* 127(12), e2021JD036382

2021 **Liu, Shengjie**, Zhize Zhou, Huaxiang Ding, Yuanjun Zhong, and Qian Shi (2021). Crop Mapping Using Sentinel Full-Year Dual-Polarized SAR Data and a CPU-Optimized Convolutional Neural Network With Two Sampling Strategies. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing* 14, 7017-7031

2021 **Liu, Shengjie**, Qian Shi, and Liangpei Zhang (2021). Few-shot Hyperspectral Image Classification with Unknown Classes Using Multitask Deep Learning. *IEEE Transactions on Geoscience and Remote Sensing* 59(6), 5085–5102

2021 **Liu, Shengjie**, Haowen Luo, and Qian Shi (2021). Active Ensemble Deep Learning for Polarimetric Synthetic Aperture Radar Image Classification. *IEEE Geoscience and Remote Sensing Letters* 18(9), 1580–1584

2020 **Liu, Shengjie**, and Qian Shi (2020). Local Climate Zone Mapping as Remote Sensing Scene Classification Using Deep Learning: A Case Study of Metropolitan China. *ISPRS Journal of Photogrammetry and Remote Sensing* 164, 229-242

2020 **Liu, Shengjie**, and Qian Shi (2020). Multitask Deep Learning With Spectral Knowledge for Hyperspectral Image Classification. *IEEE Geoscience and Remote Sensing Letters* 17(12), 2110-2114

2019 **Liu, Shengjie**, Zhixin Qi, Xia Li, and Anthony Gar-On Yeh (2019). Integration of Convolutional Neural Networks and Object Based Post-Classification Refinement for Land Use and Land Cover Mapping with Optical and SAR Data. *Remote Sensing* 11(6), 690

### Conference proceedings

2023 **Liu, Shengjie**, Chu Wing So, Hung Chak (Derrick) Ho, Qian Shi, and Jason C.S. Pun (2023). Using high-resolution nighttime remote sensing data to identify light sources in Hong Kong. Accepted to *IGARSS 2023*

2023 **Liu, Shengjie**, Chu Wing So, Xiang Feng Foo, and Jason C.S. Pun (2023). Using multisource data to capture the impacts of Earth Hour 2021: A case study of Hong Kong. Accepted to *IGARSS 2023*

2022 **Liu, Shengjie**, and Qian Shi (2022). Estimating PM2.5 and PM10 on Zhuhai-1 hyperspectral imagery. *IGARSS 2022*, 5933-2936

2021 **Liu, Shengjie**, Chu Wing So, and Jason C.S. Pun (2021). Analyzing long-term artificial light at night using VIIRS monthly product with land use data: Preliminary result of Hong Kong. *IGARSS 2021*, 6821-6824

2021 **Liu, Shengjie**, and Qian Shi (2021). Multi-label local climate zone mapping as scene classification using very high resolution imagery: Preliminary result of Hong Kong. *IGARSS 2021*, 6809-6812

2018 **Liu, Shengjie**, Haowen Luo, Ying Tu, Zhi He, and Jun Li (2018). Wide contextual residual network with active learning for remote sensing image classification. *IGARSS 2018*, 7145-7148

### Conference abstracts

presenter marked with *

2022 **Liu, Shengjie***, Chu-Wing So, Hung Chak Ho, Qian Shi, and Jason C.S. Pun (2022). Disproportionate distribution of artificial light at night in Hong Kong: evidence from space with high-resolution nighttime remote sensing. *Advanced Urban Remote Sensing Workshop*, Hong Kong, December 2022

2022 Pun, Jason C.S., Chu Wing So*, **Shengjie Liu**, Lina Canas, Constance E. Walker, and Sze Leung

Cheung (2022). Measurement of cloud amplification effect over a wide range of night sky brightness observations with the GaN-MN. *LPTMM 2022*, Santiago de Compostela, Galicia, Spain, June 2022

2022 Pun, Jason C.S., Chu Wing So, and **Shengjie Liu*** (2022). Analyzing the sources and variations of night lights between 2012 and 2019 in Hong Kong from VIIRS monthly products. *LPTMM 2022*, Santiago de Compostela, Galicia, Spain, June 2022

2021 **Liu, Shengjie***, Chu Wing So, and Jason C.S. Pun (2021). Analyzing the sources and variations of night lights between 2012 and 2019 in Hong Kong from VIIRS monthly products. *ALAN 2021*, Lleida, Catalonia, Spain, June 2021

2021 Chu Wing So*, Nok Yan Janet Chang, **Shengjie Liu**, Lina Canas, Constance E. Walker, Sze Leung Cheung, and Jason C.S. Pun (2021). A multinational study of night sky brightness patterns: Preliminary results from the Globe at Night – Sky Brightness Monitoring Network (GaN-MN) of the study of cloud amplification on NSB. *ALAN 2021*, Lleida, Catalonia, Spain, June 2021

2020 Pun, Jason C.S.*, Chu Wing So, Nok Yan Janet Chang, **Shengjie Liu**, Lina Canas, Constance E. Walker, and Sze Leung Cheung (2020). A multinational study of night sky brightness patterns: Preliminary results from the Globe at Night – Sky Brightness Monitoring Network (GaN-MN). *ALAN 2020*, Lleida, Catalonia, Spain, June 2020

## Grants, honours & awards

2023 USC Dornsife PhD Academy Scholarship, US$500

2022 USC Dornsife PhD Academy Scholarship, US$485

2020 Arctic Code Vault Contributor, GitHub

2019 Zhuhai Orbita Hyperspectral Data Processing Paper Contest, CN¥5,000 (US$714)

2018 IEEE IGARSS Student Travel Grant, US$1,650

2018 Scholarship of SYSU EMBA Alumni Association, CN¥3,000 (US$428)

2018 National Undergraduate Innovative Project, CN¥10,000 (US$1,428)

## Participated projects

2023 Southern California Environmental Health Sciences Center Pilot Project. PI: Dr Lu Zhang

2019-2021 Environment and Conservation Fund of the Government of the Hong Kong Special Administrative Region (2018-125), PI: Dr Jason C.S. Pun. *Effects of external lighting on the environment*

2019 Guangdong Basic and Applied Basic Research Foundation (2019A1515011057), PI: Dr Qian Shi

2019 National Natural Science Foundation of China (61976234), PI: Dr Qian Shi

2018 National Natural Science Foundation of China (61601522), PI: Dr Qian Shi

## Teaching

### Lab instructor & teaching assistant

2023 SSCI-382 Geographic Information Science: Spatial Analytics

2023 SSCI-220 Spatial Data Collection Using Drones

2022 SSCI-165 Sustainability Science in the City

## Service & membership

### Conference

2023 Session Chair, IGARSS 2023

### Guest lecture

2022 University of Southern California, SSCI-382 Geographic Information Science: Spatial Analytics, *Urban Heat Islands with Nighttime and Daytime Landsat Imagery*

### Journal reviewer

IEEE Geoscience and Remote Sensing Letters (2)
IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (14)
IEEE Transactions on Geoscience and Remote Sensing (3)
Knowledge-Based Systems (3)
Pattern Recognition Letters (2)
Remote Sensing Letters (3)
Scientific Reports (2)
Urban Climate (12)

### Membership

American Society for Photogrammetry and Remote Sensing
Atmospheric Environmental Remote Sensing Society
IEEE Geoscience and Remote Sensing Society (GRSS)
IEEE GRSS Image Analysis and Data Fusion (IADF) Technical Committee

## Skills & software

Deep learning: Pytorch, TensorFlow, Keras
Coding: Python, MATLAB, Julia, R, ENVI-IDL, HTML5, LaTeX
Software: QGIS, ArcGIS, GeoDa, OriginLab, Gephi, ENVI, eCognition, ESA-SNAP

Last updated: June 19, 2023