Liu, Shengjie Kris

Curriculum Vitae

University of Southern California
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Los Angeles, CA 90089, USA
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Education and Academic Training

2021– **University of Southern California**, USA
Ph.D. in Population, Health and Place

2019–2021 **The University of Hong Kong**, Hong Kong
Research Assistant (Full-Time), Department of Physics

2015–2019 **Sun Yat-Sen University**, China
B.S. in Geographical Information Science (Remote Sensing Track)
- Thesis: Deep learning for land use and land cover classification

Journal Publications

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

7. Christopher C. M. 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, Mathias Schneider, Ranjay Man Shrestha, Alexandre Simoneau, Chu Wing So, Tobias Storch, Kai Pong Tong, Milagros Tuñón, Diane Turnshek, Ken Walczak, Jun Wang, Zhuosen Wang, and Jianglong Zhang. Multiple angle observations would benefit visible band remote sensing using night lights. ***Journal of Geophysical Research: Atmospheres***, 127(12):e2021JD036382, 2022

6. **Shengjie Liu**, Zhize Zhou, Huaxiang Ding, Yuanjun Zhong, and Qian Shi. 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

5. **Shengjie Liu**, Qian Shi, and Liangpei Zhang. Few-shot hyperspectral image classification with unknown classes using multitask deep learning. ***IEEE Transactions on Geoscience and Remote Sensing***, 59(6):5085–5102, 2020

4. **Shengjie Liu**, Haowen Luo, and Qian Shi. Active ensemble deep learning for polarimetric synthetic aperture radar image classification. ***IEEE Geoscience and Remote Sensing Letters***, 18(9):1580–1584, 2020

3. **Shengjie Liu** and Qian Shi. 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

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

1. **Shengjie Liu**, Zhixin Qi, Xia Li, and Anthony Gar-On Yeh. 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, 2019

Conference Proceedings

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

5. **Shengjie Liu**, Chu Wing So, Xiang Feng Foo, and Jason C.S. Pun. Using multi-source data to capture the impacts of Earth Hour 2021: A case study of Hong Kong. In ***IGARSS 2023*** - *2023 IEEE International Geoscience and Remote Sensing Symposium*, 2023

4. **Shengjie Liu** and Qian Shi. Estimating PM2.5 and PM10 on Zhuhai-1 hyperspectral imagery. In ***IGARSS 2022*** - *2022 IEEE International Geoscience and Remote Sensing Symposium*, pages 5933–5936, 2022

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

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

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

Conference Abstracts

Presenter marked with #

6. **Shengjie Liu**#, Chu-Wing So, Hung Chak Ho, Qian Shi, and Chun Shing Jason Pun. Disproportionate distribution of artificial light at night in Hong Kong: evidence

from space with high-resolution nighttime remote sensing. In ***Advanced Urban Remote Sensing Workshop***, Hong Kong, December 2022

5. Chun Shing Jason Pun, Chu Wing So#, **Shengjie Liu**, Lina Canas, Constance E. Walker, and Sze Leung Cheung. Measurement of cloud amplification effect over a wide range of night sky brightness observations with the GaN-MN. In ***LPTMM 2022*** - *Light Pollution Theory Modeling and Measurement*, Santiago de Compostela, Galicia, Spain, June 2022

4. Chun Shing Jason Pun, Chu Wing So, and **Shengjie Liu**#. Analyzing the sources and variations of night lights between 2012 and 2019 in hong kong from VIIRS monthly products. In ***LPTMM 2022*** - *Light Pollution Theory Modeling and Measurement*, Santiago de Compostela, Galicia, Spain, June 2022

3. **Shengjie Liu**#, Chu Wing So, and Chun Shing Jason Pun. The relationship between night sky brightness and remote sensing data: Preliminary result from Luojia-1 and the International Space Station. In ***ALAN 2021*** - *7th International Conference on Artificial Light at Night*, Lleida, Catalonia, Spain, June 2021

2. Chu Wing So#, Nok Yan Janet Chang, **Shengjie Liu**, Lina Canas, Constance E. Walker, Sze Leung Cheung, and Chun Shing Jason Pun. 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. In ***ALAN 2021*** - *7th International Conference on Artificial Light at Night*, Lleida, Catalonia, Spain, June 2021

1. Chun Shing Jason Pun#, Chu Wing So, Nok Yan Janet Chang, **Shengjie Liu**, Lina Canas, Constance E. Walker, and Sze Leung Cheung. A multinational study of night sky brightness patterns: Preliminary results from the globe at night – sky brightness monitoring network (GaN-MN). In ***ALAN 2020*** - *6th International Conference on Artificial Light at Night*, Lleida, Catalonia, Spain, June 2020

Awards and Honors

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 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

Guest Lecture

Oct 2022 **Urban Heat Islands with Nighttime and Daytime Landsat Imagery**
University of Southern California, SSCI-382 GIScience Spatial Analytics

Teaching

Spring 2023 **SSCI-382 GIScience Spatial Analytics**
Lab Instructor and Teaching Assistant, University of Southern California

Spring 2023 **SSCI-220 Spatial Data Collection Using Drones**
Lab Instructor and Teaching Assistant, University of Southern California

Fall 2022 **SSCI-165 Sustainability Science in the City**
Lab Instructor and Teaching Assistant, University of Southern California

Journal Reviewer

- IEEE Geoscience and Remote Sensing Letters
- IEEE J. of Selected Topics in Applied Earth Observations and Remote Sensing
- IEEE Transactions on Geoscience and Remote Sensing
- Knowledge-Based Systems
- Pattern Recognition Letters
- Remote Sensing Letters
- Scientific Reports
- Urban Climate

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

Deep Learning	Pytorch, Keras, TensorFlow
Python	scikit-learn, pandas, geopandas, networkX, matplotlib
Coding	Python, MATLAB, R, Julia, C/C++, IDL, HTML5, LaTeX
Software	QGIS, ArcGIS, GeoDa, OriginLab, Gephi, ENVI, ESA-SNAP, eCognition

Research Experience (Selected works not published yet)

2022 **Fine-scale mapping of PM1, PM2.5 and PM10 using Landsat imagery and PurpleAir data in Los Angeles**

- Collected 25-day PurplrAir particular matter data (PM1, PM2.5, PM10) in Los Angeles (N=537-715 stations) from 16,738 PurpleAir stations in the world
- Developed a convolutional neural network for estimating PMx exposures (input: Landsat imagery; output: PM1, PM2.5, PM10)
- Achieved R^2=0.69-0.77 on three PMx exposures based on leave-out data validation
- Wrote a report (available on request)

2022 **Predicting brain ages with MRI imagery**

- Pre-processed brain images using the standard pipeline with FSL 5.10 on Linux
- Developed deep learning models to predict brain ages on the IXI dataset (R^2=0.85)