Shengjie LIU

Contact Information

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Spatial Sciences Institute, University of Southern California
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Research Interests

AI4EO Remote Sensing, Deep Learning (Few-Shot, Multi-Task, Open-Set), Data Fusion, Hyperspectral
Climate Temperature-Related Mortality/Morbidity, Local Climate Zone, Green Space
Light Artificial Light At Night, Ground/Space Observations, Multi-Angle, Multi-Resolution

Education

University of Southern California — Los Angeles, California, USA
Ph.D. in Population, Health and Place — 2021 – Present

Sun Yat-Sen University — Guangzhou, China
B.S. in Geographic Information Science — Conferred 2019

Employment

The University of Hong Kong — Pokfulam, Hong Kong
Research Assistant, Department of Physics — 2019 – 2021

Refereed Journal Publications

7. Kyba, C.C.M., M. Aubé, S. Bará, A. Bertolo, C.A. Bouroussis, S. Cavazzani, B.R. Espey, F. Falchi, G. Gyuk, A. Jechow, M. Kocifaj, Z. Kolláth, H. Lamphar, N. Levin, **S. Liu**, S.D. Miller, S. Ortolani, C.S.J. Pun, S.J. Ribas, T. Ruhtz, A.S. de Miguel, M. Schneider, R.M. Shrestha, A. Simoneau, C.W. So, T. Storch, K.P. Tong, M. Tuñón, D. Turnshek, K. Walczak, J. Wang, Z. Wang, and J. Zhang. Multiple Angle Observations Would Benefit Visible Band Remote Sensing Using Night Lights. *Journal of Geophysical Research: Atmospheres*, 127, e2021JD036382, 2022.
6. **Liu, S.**, Z. Zhou, H. Ding, Y. Zhong, and Q. 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, pp. 7017-7031, 2021.
5. **Liu, S.**, Q. Shi, and L. Zhang. Few-Shot Hyperspectral Image Classification With Unknown Classes Using Multitask Deep Learning. *IEEE Transactions on Geoscience and Remote Sensing*, 59(6), pp. 5085-5102, 2021.
4. **Liu, S.**, H. Luo, and Q. Shi. Active Ensemble Deep Learning for Polarimetric Synthetic Aperture Radar Image Classification. *IEEE Geoscience and Remote Sensing Letters*, 18(9), pp. 1580-1584, 2021.
3. **Liu, S.**, and Q. 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, pp. 229-242, 2020.
2. **Liu, S.**, and Q. Shi. Multitask Deep Learning With Spectral Knowledge for Hyperspectral Image Classification. *IEEE Geoscience and Remote Sensing Letters*, 17(12), pp. 2110-2114, 2020.
1. **Liu, S.**, Z. Qi, X. Li, and A.G.-O. 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), p.690, 2019.

Referred Conference Proceedings

4. **Liu, S.**, and Q. Shi. Estimating PM2.5 and PM10 on Zhuhai-1 Hyperspectral Imagery. *Proceedings of IEEE International Geoscience and Remote Sensing Symposium IGARSS*, 2022, pp. 5933-5936.
3. **Liu, S.**, C.W. So, and C.S.J. Pun. Analyzing Long-Term Artificial Light at Night Using Viirs Monthly Product with Land Use Data: Preliminary Result of Hong Kong. *Proceedings of IEEE International Geoscience and Remote Sensing Symposium IGARSS*, 2021, pp. 6821-6824.
2. **Liu, S.**, and Q. Shi. Multi-Label Local Climate Zone Mapping as Scene Classification Using Very High Resolution Imagery: Preliminary Result of Hong Kong. *Proceedings of IEEE International Geoscience and Remote Sensing Symposium IGARSS*, 2021, pp. 6809-6812.
1. **Liu, S.**, H. Luo, Y. Tu, Z. He, and J. Li. Wide Contextual Residual Network with Active Learning for Remote Sensing Image Classification. *Proceedings of IEEE International Geoscience and Remote Sensing Symposium IGARSS*, 2018, pp. 7145-7148.

Manuscripts Under Review

3. **Liu, S.**, A.-M. Wu, and H.C. Ho. Spatial variability of diurnal temperature range and its associations with local climate zone, neighborhood environment and mortality in Los Angeles. Revision submitted to *Urban Climate*, under review.
2. **Liu, S.**, So C.W., H.C. Ho, Q. Shi, and C.S.J. Pun. Using high-resolution nighttime remote sensing data to identify light sources in Hong Kong. Submitted to *IGARSS 2023*, under review.
1. **Liu, S.**, So C.W., X.F. Foo, and C.S.J. Pun. Using multi-source data to capture the impacts of Earth Hour 2021. Submitted to *IGARSS 2023*, under review.

Referred Conference Abstracts

presenter marked with *

6. **Liu, S.***, C.W. So, H.C. Ho, Q. Shi, C.S.J. 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*, December 2022, HKSAR, China.
5. Pun, C.S.J., C.W. So*, **S. Liu**, L. Canas, C.E. Walker, and S.L. Cheung. Measurement of cloud amplification effect over a wide range of night sky brightness observations with the GaN-MN. In *LPTMM - Light Pollution Theory Modeling and Measurement*, June 2022, Santiago de Compostela, Galicia, Spain.
4. Pun, C.S.J., C.W. So, and **S. Liu***. Analyzing the Sources and Variations of Night Lights Between 2012 and 2019 in Hong Kong from VIIRS Monthly Products. In *LPTMM - Light Pollution Theory Modeling and Measurement*, June 2022, Santiago de Compostela, Galicia, Spain.
3. **Liu, S.***, C.W. So, and C.S.J. Pun. The relationship between night sky brightness and remote sensing data: Preliminary result from Luojia-1 and the International Space Station. In 7^{th} *International Conference on Artificial Light at Night (ALAN)*, June 2021, Lleida, Catalonia, Spain.
2. So, C.W.*, N.Y.J. Chang, **S. Liu**, L. Canas, C.E. Walker, S.L. Cheung, and C.S.J. 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 7^{th} *International Conference on Artificial Light at Night (ALAN)*, June 2021, Lleida, Catalonia, Spain.
1. Pun, C.S.J.*, C.W. So, N.Y.J. Chang, **S. Liu**, L. Canas, C.E. Walker, and S.L. Cheung. A Multinational Study of Night Sky Brightness Patterns: Preliminary Results from the Globe at Night – Sky Brightness Monitoring Network (GaN-MN). In 6^{th} *International Conference on Artificial Light at Night (ALAN)*, June 2020, Lleida, Catalonia, Spain.

Awards & Honors

USC Dornsife PhD Academy Scholarship, 485 USD	2021
Orbita Hyperspectral Processing Paper Contest, 5000 CNY (714 USD)	2019
IEEE IGARSS Student Travel Grant, 1650 USD	2018
Scholarship of SYSU EMBA Alumni Association, 3000 CNY (428 USD)	2018
National Undergraduate Innovative Project, 10,000 CNY (1428 USD)	2018

Guest Lecture

Urban Heat Islands with Nighttime and Daytime Landsat Imagery
SSCI382 Geographic Information Science: Spatial Analytics
University of Southern California Oct 2022

Teaching

Lab Instructor and TA Spring 2023
USC SSCI382 Geographic Information Science: Spatial Analytics

Lab Instructor and TA Spring 2023
USC SSCI220 Spatial Data Collection Using Drones

Lab Instructor and TA Fall 2022
USC SSCI165 Sustainability Science in the City

Professional Service

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 Association of Geographers
- American Society for Photogrammetry and Remote Sensing
- IEEE Geoscience and Remote Sensing Society (GRSS)
- IEEE GRSS Image Analysis and Data Fusion (IADF) Technical Committee