

# SHENGJIE KRIS LIU

Dornsife Spatial Sciences Institute  
University of Southern California  
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# CURRICULUM VITAE

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**Research** Remote sensing, machine learning, urban climate, nighttime lights

**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*  
Committee: Lu Zhang, Siqin Sisi Wang, Emily Smith-Greenaway, Sandrah P Eckel, David V Conti

**The University of Hong Kong** 10/2019 – 08/2021  
RA of Artificial Light at Night  
Advisor: Chun Shing Jason Pun

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

**Publications** **Articles in peer-reviewed journals**

- [14] 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
- [13] 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
- [12] 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
- [11] 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
- [10] 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
- [9] 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
- [8] Multitask Deep Learning With Spectral Knowledge for Hyperspectral Image Classification  
**Shengjie Liu**, and Qian Shi  
*IEEE GRSL – IEEE Geoscience and Remote Sensing Letters* 2020

- [7] 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, and Anthony Gar-On Yeh  
*Remote Sensing* 2019

#### Articles in peer-reviewed conference proceedings

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

- [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*
- [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*
- [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*
- [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*

- [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

- [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

#### Articles under review

- [R4] Deep Feature Gaussian Processes for Single-Scene Aerosol Optical Depth Reconstruction  
**Shengjie Liu**, Lu Zhang
- [R3] Ethnic Minorities and Low-Income Populations Disproportionately Exposed to Extreme Daily Temperature Variation in the United States  
**Shengjie Liu**, Emily Smith-Greenaway
- [R2] 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
- [R1] Effects of urban green space on human cognition: A systematic search and scoping review  
**Shengjie Liu**, John P Wilson

<b>Invited talks &amp; Guest lectures</b>	The University of Hong Kong, Advanced Urban Remote Sensing Workshop	12/2022
	<i>Disproportionate distribution of artificial light at night in Hong Kong: evidence from space with high-resolution nighttime remote sensing</i>	
	University of Southern California	10/2022
	SSCI-382 Geographic Information Science: Spatial Analytics. <i>Urban Heat Islands with Nighttime and Daytime Landsat Imagery</i>	
	East China Normal University, The 3rd Urban Remote Sensing Workshop, Shanghai	10/2020
	<i>Two cases of deep learning remote sensing image classification: local climate zone mapping and fine-grained classification considering unknown classes</i>	
<b>Awards &amp; Scholarships</b>	Dornsife PhD Academy Scholarship (US\$500)	2023
	Dornsife PhD Academy Scholarship (US\$485)	2022
	USC Spatial Sciences Institute Fellowship for Incoming Students (Stipend for 2 Summers, US\$21,500)	08/2021 – 05/2026
	USC Graduate School Fellowship for Incoming Students (Stipend for 2 Academic Years, US\$70,500)	08/2021 – 05/2026
	Arctic Code Vault Contributor, GitHub	2020
	Zhuhai Orbita Hyperspectral Data Processing Paper Contest, CN¥5,000 (US\$714)	2019
	IEEE IGARSS 2018 Student Travel Grant (US\$1,650)	2018
	SYSU EMBA Alumni Association Scholarship, CN¥3,000 (US\$428)	2018
	National Undergraduate Innovative Project, CN¥10,000 (US\$1,428)	2018
<b>Research projects</b>	<b>Participated funded projects</b> (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 <i>Effects of external lighting on the environment</i> (2018-125, PI: Jason C.S. Pun)	2019 – 2021
	HKU Knowledge Exchange Fund, University Grants Committee of Hong Kong (KE-IP-2019/20-54, KE-IP-2020/21-78; PI: Jason C.S. Pun)	2019 – 2021
	Guangdong Basic and Applied Basic Research Foundation (2019A1515011057; PI: Qian Shi)	2019
	National Natural Science Foundation of China (61601522, 61976234; PI: Qian Shi)	2018 – 2019

<b>Teaching</b>	<b>University of Southern California</b> <a href="#">SSCI-382 Geographic Information Science: Spatial Analytics</a> , Sp 2023 (Lab instructor; rating: 4.0/4.0) <a href="#">SSCI-220 Spatial Data Collection Using Drones, Spring 2023</a> (Lab instructor; rating: 4.0/4.0) <a href="#">SSCI-165 Sustainability Science in the City, Fall 2022</a> (Lab instructor; rating: 3.59/4.0)
<b>Service &amp; Membership</b>	<b>Conference</b> <i>IGARSS 2024, Session Chair, Nighttime Light Remote Sensing for Sustainable Development Goals</i> <i>IGARSS 2023, Session Chair, Hyperspectral Imaging Classification</i> <b>Journal reviewer</b> <i>IEEE Geoscience and Remote Sensing Letters</i> (2) <i>IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing</i> (14) <i>IEEE Transactions on Geoscience and Remote Sensing</i> (4) <i>International Journal of Digital Earth</i> <i>Knowledge-Based Systems</i> (6) <i>Pattern Recognition Letters</i> (2) <i>Remote Sensing Letters</i> (3) <i>Scientific Reports</i> (2) <i>Urban Climate</i> (14) <b>Membership</b> <i>American Geophysical Union (AGU)</i> <i>Atmospheric Environmental Remote Sensing Society</i> <i>European Geosciences Union (EGU)</i> <i>IEEE Geoscience and Remote Sensing Society (GRSS)</i> <i>IEEE GRSS Image Analysis and Data Fusion (IADF) Technical Committee</i>