


XIAO HUANG


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Assistant Professor

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EDUCATION

- Ph.D.** Department of Geography, University of South Carolina, Columbia, South Carolina, USA.
- M.S.** School of City Planning & Architecture, Georgia Institute of Technology, Atlanta, Georgia, USA.
- B.S.** School of Remote Sensing and Information Engineering, Wuhan University, Wuhan, Hubei Province, China.

ACADEMIC APPOINTMENT

- 2020 Assistant Professor, Department of Geosciences, University of Arkansas, Fayetteville, Arkansas, USA
- 2016 Research and Teaching Assistant, Department of Geography, University of South Carolina, Columbia, South Carolina, USA.

RESEARCH INTERESTS

Geospatial analysis
Big data analytics
Spatial and social data mining
Remote sensing
GeoAI and Deep Learning

PUBLICATIONS

Refereed Journal Articles

An “*” represents a student under my supervision; a “†” indicates corresponding author.

Submitted [Huang, X.[†]](#), Li, Z., Jiang, Y., Deng, C. & Zhang, J. The Characteristics of multi-source mobility datasets and how they reveal the luxury nature of social distancing in the U.S. during the COVID-19 pandemic (Under Review).

[Huang, X.[†]](#), Lu, J., Gao, S., Wang, S., Liu, Z., Han, X. Staying at home is a privilege: evidence from fine-grained mobile phone location data in the U.S. during the COVID-19 pandemic. (Under Review).

CURRICULUM VITAE

- Xu, D., Huang, X., & Li, Z. Multi-Exit Evacuation Simulation based on Deep Reinforcement Learning (Under Review).
- Wang, J., Shao, Z., Huang, X., Lu, T., Zhang, R. & Lv, X. Spatial-temporal Pooling for Action Recognition in Videos. Neurocomputing (Under Review).
- Wang, J., Shao, Z., Huang, X., Lu, T. & Zhang, R. Pan-sharpening via high-pass modification convolutional neural network (Under Review).
- Shao, Z., Cheng, G., Li, D., Huang, X., Lu, Z. & Liu, J. Spatio-temporal-spectral-angular observation model that integrates observations from UAV and mobile mapping vehicles for better urban mapping. (Under Review).
- Wang, X., Li, D., Huang, X. & Shao, Z. A systematic review on remote sensing of urban heat island (Under Review).
- Shao, Z., Pan, W., Huang, X., Li, Y. & Peng, S. Video Stabilization for Improved Video Anomaly Detection (Under Review).
- Zhang, M., Cheng, Q., Luo, F., Ye, L. & Huang, X. A Triplet Non-Local Neural Network with Dual-Anchor Triplet Loss for High Resolution Remote Sensing Image Retrieval (Under Review).
- Shao, Z., Tang, Y., Huang, X. & Li, D. Monitoring work redumption of Wuhan in the COVID-19 Pandemic using daily nighttime light (Under Review).
- Wang, J., Shao, Z., Lu, T., Zhang, R., Huang, X. & Lv, X. Spatio-temporal pooling for action recognition in videos (Under Review).
- Song, P., Shao, Z., Huang, X. & Zhang, R. BiCSNet: A Novel Bidirectional Cross-Scale Backbone for Recognition and Localization. (Under Review).
- Wang, J., Shao, Z., Huang, X., Lu, T., Zhang, R. & Wang, Z. Enhanced Image Prior for Unsupervised Remoting Sensing Super-Resolution (Under Review).
- Wang, J., Shao, Z., Huang, X., et al. NSN: Deep Non-local Self-regression Networks for Satellite Image Super-resolution (Under Review).
- Zhang, R., Newsam, S., Li, D., Huang, X., Wang, J. & Shao, Z. Multi-Scale Adversarial Network for Object Detection in UAV Imagery (Under Review).
- Zhuang Q., Shao Z., Huang, X., Zhang, Y. & Wu, W. Evolution of soil salinization under the background of landscape patterns in the irrigated northern slopes of Tianshan Mountains, Xinjiang, China (Under Review).
- Zhang, R., Shao, Z., Li, D., Wang, J., Wang, Y. & Huang, X. Adaptive dense pyramid network for objection in UAV imagery (Under Review).
- Shao, Z., Wu, W., Huang, X. & Li, D. Spatio-Temporal-Spectral observation model for urban remote sensing (Under Review).
- Shao, Z., Liu, L., Huang, X., Altan, O. & Javed, A. Urban Impervious Surface Monitoring from Time-series of High-Resolution Remote Sensing Images with Time-invariant Spectral Features (Under Review).
- Li, X., Ning, H., Dadashova, B., Ma, A., Kang, Y., Huang, X. Intersection Audit: An Effective Protocol to Identify Signalized Intersections by Mining Google Street View Images (Under Review).
- Shao, Z., Feng, X., Bai, L., Jiao, H., Zhang, Y., Li, D., Fan, H., Huang, X. & Ding, Y. Monitoring and Predicting Desert Locust Plague Severity in Asia-Africa using Multi-source Remote Sensing Time-series data (Under Review).

CURRICULUM VITAE

- 2021 Shao, Z., Zhou, Z., Huang, X., & Zhang, Y. (2021). MRENet: Simultaneous Extraction of Road Surface and Road Centerline in Complex Urban Scenes from Very High-Resolution Images. *Remote Sensing*, 13(2), 239. doi:10.3390/rs13020239
- 2020 Huang, X., Li, Z., Jiang, Y., Li, X., & Porter, D. (2020). Twitter reveals human mobility dynamics during the COVID-19 pandemic. *PLOS ONE*, 15(11), e0241957.
- Huang, X.[†], Li, Z., Lu, J., Wang, S., Wei, H., & Chen, B. (2020). Time-series clustering for home dwell time during COVID-19: what can we learn from it? *ISPRS International Journal of Geo-Information*, 9(11), 675.
- Huang, X.[†], & Wang, C. (2020). Estimates of exposure to the 100-year floods in the conterminous United States using national building footprints. *International Journal of Disaster Risk Reduction*, doi: 10.1016/j.ijdr.2020.101731.
- Huang, X., Wang, C., Li, Z., & Ning, H. (2020). A 100 m population grid in the CONUS by disaggregating census data with open-source Microsoft building footprints. *Big Earth Data*, 10.1080/20964471.2020.1776200.
- Xu, D., Huang, X., Li, Z., & Li, X. (2020). Local Motion Simulation using Deep Reinforcement Learning, *Transactions in GIS*, doi: 10.1111/tgis.12620.
- Ning, H., Huang, X., Wang, C., & Li, Z. (2020). Detection new building construction in urban areas based on images of small unmanned aerial system. *Papers in Applied Geography*, doi: 10.1080/23754931.2019.1707108.
- Zhang, R., Shao, Z., Huang, X., Wang, J., & Li, D. (2020). Object Detection in UAV Images via Global Density Fused Convolutional Network. *Remote Sensing*, 12(19), 3140.
- Lu, J., Carbone, G. J., Huang, X., Lackstrom, K., & Gao, P. (2020). Mapping the sensitivity of agriculture to drought and estimating the effect of irrigation in the United States, 1950–2016. *Agricultural and Forest Meteorology*, 292, 108124.
- Liu, Z., Zhang, A., Yao, Y., Shi, W., Huang, X., & Shen, X. (2020). Analysis of the performance and robustness of methods to detect base locations of individuals with geo-tagged social media data. *International Journal of Geographical Information Science*, doi: 10.1080/13658816.2020.1847288.
- 2019 Huang, X.[†], Wang, C. Lu, J., & Ning, H. (2019). Understanding spatiotemporal development of human settlement in hurricane-prone areas on U.S. Atlantic and Gulf Coasts using nighttime remote sensing, *Natural Hazards and Earth System Sciences*, doi: 10.5194/nhess-19-2141-2019.
- Huang, X.[†], Wang, C. Li, Z., & Ning, H. (2019). Identifying disaster related social media for rapid response: a visual-textual fused CNN architecture. *International Journal of Digital Earth*, doi: 10.1080/17538947.2019.1633425.
- 2018 Huang, X.[†], Wang, C. Li, Z., & Ning, H. (2018). A visual-textual fused approach to automated tagging of flood-related tweets during a flood event. *International Journal of Digital Earth*, doi: 10.1080/17538947.2018.1523956.
- Huang, X.[†], Wang, C., & Li, Z. (2018). Reconstructing flood inundation probability by enhancing near real-time imagery with real-time gauges and tweets. *IEEE Transactions on Geoscience and Remote Sensing*, 56(8), 4691-4701.
- Huang, X.[†], Wang, C., & Li, Z. (2018). A near real-time flood-mapping approach by integrating social media and post-event satellite imagery. *Annals of GIS*, 24(2), 113-123.

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- Wang, C., Li, Z., & Huang, X. (2018). Geospatial Assessment of Wetness Dynamics in the October 2015 SC Flood with Remote Sensing and Social Media. *Southeastern Geographer*, 58(2), 164-180.
- Li, H., Wang, C., Huang, X., & Hug, A. (2018). Spatial Assessment of Water Quality with Urbanization in 2007–2015, Shanghai, China. *Remote Sensing*, 10(7), 1024.

Book Chapters

- 2021 Young, S. G., Datta, J., Kar, B., Huang, X., Williamson, M. D., Tullis, J. A. & Cothren, J. Challenges and limitations of geospatial data and analyses in the context of COVID-19 (Accepted).
- 2020 Huang, X., Wang, C., Li, Z., & Ning, H. A visual–textual fused approach to automated tagging of flood-related tweets during a flood event. *Social Sensing and Big Data Computing for Disaster Management* (Accepted).

Peer Reviewed Conference Proceedings

- 2020 Huang, X.[†], Xu, D., Li, Z., & Wang, C. (2020). Translating multispectral imagery to nighttime imagery via conditional generative network. 2019 IEEE International Geoscience and Remote Sensing Symposium (accepted).
- 2019 Huang, X.[†], Wang, C., & Li, Z. (2019). Linking picture with text: tagging flood relevant tweets for rapid flood inundation mapping. Proceedings of the International Cartographic Association, 2, 45, doi: 10.5194/ica-proc-2-45-2019.
- Huang, X.[†], Wang, C., & Li, Z. (2019). High-Resolution Population Grid in the CONUS using Microsoft Building Footprints: A Feasibility Study. Proceedings of the 3rd ACM SIGSPATIAL Workshop on Geospatial Humanities, doi: 10.1145/3356991.3365469.
- Huang, X.[†], & Wang, C. (2019). Human settlement dynamics in hurricane-prone zones of CONUS: view from nighttime remote sensing perspective. 2019 IEEE International Geoscience and Remote Sensing Symposium, doi: 10.1109/IGARSS.2019.8899106.

Other Publications

- 2020 Huang, X.[†] (2020). Remote Sensing and Social Sensing for Improved Flood Awareness and Exposure Analysis in the Big Data Era. (Doctoral dissertation). Retrieved from <https://scholarcommons.sc.edu/etd/585>.
- 2019 Huang, X.[†], & Wang, C. (2019). Human settlement dynamics in hurricane-prone zones of CONUS: view from nighttime remote sensing perspective. 2019 IEEE International Geoscience and Remote Sensing Symposium, doi: 10.1109/IGARSS.2019.8899106.
- Huang, X.[†] (2019). The fusion of remote sensing and social sensing in rapid flood mapping: motivation, opportunities and challenges, U.S. National Report (U.S. National Committee for the International Cartographic Association): <https://cartogis.org/usnc-ica/us-national-report/>.
- 2017 Huang, X.[†] (2017). A Future Energy Harvesting Scenario for Georgia Tech Campus Using Photovoltaic Solar Panels and Piezoelectric Materials. MS-GIST Capstone Paper, Georgia Institute of Technology.

AWARDS, GRANTS, AND SCHOLARSHIPS

External Grants

- Pending NASA EPSCoE Research Infrastructure Development (RID). Co-PI (with PI Yaqian He and Co-PI Matthew Connolly). Project: *Quantifying impacts of irrigation and the consequent climate variability on crop yield in the North Arkansas Delta*.
- 2019 Travel Grant, Japan Local Organizing Committee to the International Cartographic Association, for the participation in the bi-annual International Cartographic Conference (ICC 2019). (¥100,000)
- Travel Grant, U.S National Committee (USNC) to the International Cartographic Association, for the participation in the bi-annual International Cartographic Conference (ICC 2019). (\$2000)

Internal Grants

- 2019 The SPARC Graduate Research Grant, sponsored by the Office of the Vice President for Research, University of South Carolina. Co-PI. Funded project: *A Deep Learning Supported Flood Mapping Framework that Integrates Remote Sensing and Social Sensing*. (\$5000)
- Teaching Resource Development Grant, Center for Teaching Excellence, University of South Carolina. (\$750)

Awards, Honors, and Fellowships

- 2019 Second Place in Student Paper Competition, the 42nd of the Applied Geography Conference, Charlotte, NC, October 23-25.
- Breakthrough Graduate Scholar, University of South Carolina.
- The Paul E. Lovingood Graduate Research Award.
- Second Place in Robert Raskin Student Paper Competition, American Association of Geographers (AAG) Cyberinfrastructure Specialty Group (CISG), Washington, DC, April 3-April 7.
- 2018 Second Place in Remote Sensing Specialty Group (RSSG) Student Paper Competition, American Association of Geographers (AAG), New Orleans, LA, April 10-April 14.
- 2017 First Place Student Paper Award, the 25th International Conference on GeoInformatics, Buffalo, OH, August 3.
- 2013 National Second-Class Scholarship, Wuhan University (WHU). (\$500)
- 2012 National Second-Class Scholarship, Wuhan University (WHU). (\$500)

CONFERENCES

Selected Oral Presentations (* for presenting author)

- 2020 Huang, X.*, Xu, D., Li, Z., & Wang, C. 2020. *Translating multispectral imagery to nighttime imagery via conditional generative adversarial network*. 2020 IEEE International Geoscience and Remote Sensing Symposium, Waikoloa, Hawaii, USA, July 19 - July 24.
- 2019 Huang, X.* (invited panelist). 2019. *Deep learning in social media retrieval for rapid flood mapping*. U.S. Geological Survey: leveraging Crowdsourcing, Citizen Science, and

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Social Media to Produce Volunteer Geographic Information (VGI) for Hazard Science, Disaster Research, and Emergency Management, D.C, April 6.

- Huang, X.* (invited speaker). 2019. *Combining virtual geographic environment and fieldwork to promote efficient learning in Geography*. Oktoberbest: A Celebration of Teaching, UoSC Russell House, October 18.
- Huang, X.*, & Wang, C. 2019. *Social media data mining in supporting rapid flood inundation mapping*. The 74th Annual Meeting of SouthEastern Division of the American Association of Geographers, Wilmington, NC, November 24 - 25.
- Huang, X.*. 2019. *Generating population grid in the CONUS by disaggregating census population with Microsoft building footprints*. The 74th Annual Meeting of SouthEastern Division of the American Association of Geographers, Wilmington, NC, November 24 - 25.
- Huang, X.*, Wang, C., & Li, Z. 2019. *High-Resolution Population Grid in the CONUS using Microsoft Building Footprints: a feasibility study*. The 3rd ACM SIGSPATIAL Workshop on Geospatial Humanities, Chicago, IL, November 5 - 8.
- Huang, X.*. 2019. *A high-resolution population grid in the CONUS based on Microsoft building footprints and its potentials in hazard studies*. Applied Geography Conference, Charlotte, NC, October 23 - 25.
- Huang, X.*, Wang, C., & Li, Z. 2019. *Linking picture with text: tagging flood relevant tweets for rapid flood inundation mapping*, 2019 International Cartographic Conference, Tokyo, Japan, July 15 - 20.
- Huang, X.*, Li, Z, & Wang, C. 2019. *Identifying disaster related social media for rapid response: a visual-textual fused approach*, AAG Annual Meeting, AAG Cyberinfrastructure Specialty Group (CISG), DC, April 3 - 7.
- Wang, C.*, Morgan, G., Hodgson, M., Huang, X. 2019. *Drone based 3D Tree Structure Surveying on Earth Dams to Assist Dam Safety*. The 74th Annual Meeting of SouthEastern Division of the American Association of Geographers, Wilmington, NC, November 24 - 25.
- 2018 Wang, C.*, & Huang, X. 2018. *Integration of social sensing and remote sensing for situation awareness of coastal floods*. The 3rd Conference of Digital Belt and Road (DBAR), Tengchong, Yunnan Province, China, December 5 - 7.
- Wang, C.*, & Huang, X. 2018. *Rapid flood inundation mapping via integrated social sensing and Earth sensing*. 2018 SEDAAG Annual Meeting, Johnson City, TN, November 8 - 19.
- Wang, C.*, & Huang, X. 2018. *Rapid flood inundation reconstruction by integrating social media and satellite imagery*. Applied Geography Conference, Kent, OH, October 31 - November 2.
- Huang, X.*, Wang, C., & Li, Z. 2018. *Reconstructing flood inundation probability by enhancing near real-time imagery with real-time gauges and tweets*, AAG Annual Meeting, Remote Sensing Specialty Group (RSSG), New Orleans, LA, April 13.
- 2017 Huang, X.*, Wang, C., & Li, Z. 2017. *A near real-time flood mapping approach by integrating social media and post-event satellite imagery*, The 25th International Conference on GeoInformatics, Buffalo, OH, August 3.

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MEDIA COVERAGE

- 2019 Research highlight by the Spatial Analysis and Modeling Specialty Group (SAM) in American Association of Geographers, “100-year Flood Exposure in the Conterminous United States Using National Building Footprints”.
https://docs.wixstatic.com/ugd/4a5b75_9434b078133b45e0b5dba453e075fe40.pdf
- Research highlight by the Hazards, Risks, and Disaster Specialty Group (HRD) in the American Association of Geographers: “Human settlement in hurricane-prone areas”.
https://docs.wixstatic.com/ugd/4a5b75_2b88057e41c9489483088b79018751a7.pdf
- Research highlight by the Applied Geography Specialty Group (AGSG) in the American Association of Geographers, “Human Settlement in Hurricane-Prone Zones is Revealed by Nighttime Remote Sensing”.
https://docs.wixstatic.com/ugd/4a5b75_2c6511375189498ba6287fc53af0f18c.pdf
- Research highlight by the Cyberinfrastructure Specialty Group (CISG) in American Association of Geographers, “Visual-textual fused CNN architecture for rapid disaster related social media retrieval”.
https://docs.wixstatic.com/ugd/4a5b75_cca08cb9c381485eb9fac8bc32f341f0.pdf

INVITED TALKS

- 2020 *Big mobility data reveal the luxury nature of social distancing and stay-at-home orders in the U.S. during the COVID-19 pandemic.* Research Seminar invited by Geoinsider, December 17 (virtual).
- Twitter and Disasters.* Guest speaker, invited by Texas A&M University Chinese School, November 14 (virtual).
- Does social inequity stand in the way of the effective implementation of stay-at-home orders?.* Seminar presenter invited by SafeGraph, November 12 (virtual).
- Big Geospatial Data in Assisting Disaster Assessment.* Research Colloquium, University of Arkansas, AR, February 14.
- 2019 *Sensing and Improving Rapid Flood Mapping through Social Media Data Mining.* Fall research seminar series in School of City & Regional Planning, Georgia Institute of Technology, Atlanta, GA, September 27.

TEACHING EXPERIENCE

University of Arkansas

- 2020 *Geospatial Technologies Computational Toolkit* (GEOS 3103)
Course evaluation (out of 5): 2020 Spring: N/A

University of South Carolina

- 2017-2018 *Geographic Information Systems* (GEOG 363)
Course evaluation (out of 5): 2018 Fall: 4.96
- The Digital Earth* (GEOG 105)
Course evaluation (out of 5): 2019 Fall: N/A; 2018 Summer: 5.0; 2018 Spring: 4.78; 2017 Fall: 4.73

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SERVICE

Departmental and School Services

- 2019 Discover USC Reviewer, Office of the Vice President for Research, University of South Carolina.
- 2018 Thinking Globally Ambassador, International Student Service, University of South Carolina.
Organizing committee, Geography Professional Development Workshop, University of South Carolina.
- 2017 Organizing committee, 2017 GIS day, University of South Carolina.

Served on Professional Committees

- 2020 Programming Committee Member, 3rd ACM SIGSPATIAL International Workshop on Advances in Resilient and Intelligent Cities (ARIC 2020), Seattle, Washington, November 3, 2020

Organized Conference Sessions

- 2021 Organizer, Symposium on *Human Dynamics Research: Emerging Urban-Geo Big Data in Transportation Research*, 2021 Annual Meeting of American Association of Geographers, Seattle, WA, April 7-11.
- 2019 Chair, Special Session: *Remote Sensing and Social Sensing for Improved Disaster Monitoring*. The 74th Annual Meeting of the Southeastern Division of the American Association of Geographers, Wilmington, NC, November 24-25.

Public Outreach

- 2014 Local volunteer reception, Wuhan local reception committee of *Association internationale des étudiants en sciences économiques et commerciales* (AIESEC) global volunteer program, Wuhan, China, June 10 - August 10th.
- 2013 International volunteer, *Association internationale des étudiants en sciences économiques et commerciales* (AIESEC) global volunteer program, Egypt, Africa, June 16th - August 3rd.
International volunteer, *Association internationale des étudiants en sciences économiques et commerciales* (AIESEC) global volunteer program, Tunisia, Africa, May 15th - June 15th.
Student investigator, Lake Management and Protection Program, Wuhan, Hubei Province, China. March 15 - September 27.

Editorial Board

Frontiers Remote Sensing (2020-present)

Big Earth Data (Topic Editor) (2020-present)

Journal Reviews (Year [Times])

Annals of GIS (2020 [4]), IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (2020 [1]), International Journal of Digital Earth (2018[4], 2020[2]), Papers in Applied Geography (2019[3]), Journal of Ambient Intelligence and Humanized Computing (2020 [4]), Applied Geography (2020 [4]), IEEE Transactions on Geoscience and Remote Sensing (2020 [2]), PLOS ONE

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(2020 [4]), Applied Sciences (2020[2]), Annals of American Association of Geographers (2020[2]).
Transactions in GIS (2020[2])

Scholarly/Professional Organizations

Institute of Electrical and Electronics Engineers (IEEE) member (2018-present).

American Association of Geographers (AAG) member (2017-present).

Southeastern Division of the American Association of Geographers (SEDAAG) member (2017-present).

International Association of Chinese Professional in Geographic Information Sciences (CPGIS) member (2017-present).

American Geographic Society (AGS) member (2017-present).