BO PENG

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Education

- **University of Wisconsin – Madison**, Madison, WI
  - **Ph.D.** Geography / Remote Sensing & Geographic Information Science, 202x
    - **Doctoral Minor** Electrical Engineering / Signal Processing & Machine Learning
  - **M.Sc.** Electrical Engineering / Signal Processing & Machine Learning, 2019
  - **Research**: machine learning and computer vision for geospatial image recognition with applications in disaster resilience
  - **Advisor**: Prof. Qunying Huang
- **University of Chinese Academy of Sciences**, Beijing, China
  - **M.Sc.** Geographic Information Systems / Remote Sensing, 2017
  - **Thesis**: Real-time Causal Progressive Hyperspectral Anomaly Detection based on Cholesky Decomposition
  - **Advisor**: Prof. Qingxi Tong, Prof. Lifu Zhang
- **Wuhan University**, Wuhan, China
  - **B.Eng.** Remote Sensing, 2014

Research Experience

- **Department of Geography, University of Wisconsin-Madison**, Madison, WI
  Research Assistant, Aug. 2017 - present
  Funded by National Science Foundation (NSF), Wisconsin Alumni Research Foundation (WARF)
  - Research in machine learning and computer vision for geospatial image recognition with applications in disaster resilience
- **National Engineering Laboratory for Satellite Remote Sensing Applications**
  Institute of Remote Sensing & Digital Earth, Chinese Academy of Sciences, Beijing, China
  Research Assistant, Sept. 2014 - June 2017
  Funded by National Natural Science Foundation of China (NSFC)
  - Research in real-time hyperspectral image and signal anomaly detection
- **School of Remote Sensing and Information Engineering, Wuhan University**, Wuhan, China
  Undergraduate Research Assistant, Sept. 2013 – June 2014
  - Developed 3D target positioning algorithms based on multi-view imaging
- **School of Remote Sensing and Information Engineering, Wuhan University**, Wuhan, China
  Summer Research Intern, June 2012 – Aug. 2012
  - Worked on camera calibration for 3D computer vision

Selected Publications

(*Underlined names are research advisors.)

- **Peng, B.**, Meng, Z., Huang, Q., & Wang, C. (2019). Patch Similarity Convolutional Neural Network for Urban Flood Extent Mapping Using Bi-Temporal Satellite Multispectral Imagery. *Remote Sensing*, 11(21), 2492. DOI: 10.3390/rs11212492
- **Peng, B.**, Liu, X., Meng, Z., & Huang, Q., (2019). Urban flood mapping with residual patch similarity learning. *Proceedings of the 3rd ACM SIGSPATIAL International Workshop on AI for Geographic Knowledge Discovery - GeoAI'19*, DOI: 40–47.10.1145/3356471.3365235
- Meng, Z., **Peng, B.**, & Huang, Q. (2019). Flood Depth Estimation from Web Images. *Proceedings of the 2nd ACM SIGSPATIAL International Workshop on Advances on Resilient and Intelligent Cities - ARIC'19*, 37–40. DOI: 10.1145/3356395.3365542
- Zhang, L., **Peng, B.**, Zhang, F., Wang, L., Zhang, H., Zhang, P., & Tong, Q. (2017). Fast real-time causal linewise progressive hyperspectral anomaly detection via cholesky decomposition. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 10(10), 4614–4629. DOI: 10.1109/JSTARS.2017.2725382
- **Peng, B.**, Zhang, L., Zhang, P, Deng, X., & Cen, Y. (2017). Real-time sample-wise hyperspectral anomaly detection algorithm using Cholesky decomposition. *Journal of Remote sensing*, 21(5):739-748. DOI: 10.11834/jrs.20176447
- **Peng, B.**, Zhang, L., Wu, T., & Zhang, H. (2016). Fast real-time target detection via target-oriented band selection. *2016 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, 5868–5871. DOI: 10.1109/IGARSS.2016.7730533

Teaching

- **CS/ECE 532 - Matrix Methods in Machine Learning**
  - Senior Teaching Assistant, Spring 2020
  - Teaching Assistant, Fall 2019
- **GEOG 377 - Introduction to Geographic Information Systems**
  - Lecturer / Instructor, Summer 2019
  - Teaching Assistant, Spring 2019
- **GEOG 574 - Spatial Database**
  - Teaching Assistant, Fall 2018

Professional Skills

- **Theoretical Area**: Machine Learning, Computer Vision, Image Processing, Algorithms
- **Mathematical Maturity**: Probability Theory, Statistical Learning, Estimation & Decision Theory, Matrix Theory, Calculus
- **Programming & OS**: Python, Matlab, C/C++, R, SQL, Julia, UNIX
- **Software & Library**: PyTorch, TensorFlow, Scikit-Learn/Image, PIL, NumPy, OpenCV, Pandas, Matplotlib, Jupyter Notebook, ENVI, ArcGIS, QGIS

Services & Activities

- **Reviewer**: IJDE, IGARSS 2020
- **Volunteer**: SPIE APRS Symposium 2014, ACM SIGSPATIAL GIS 2019
- **Organizer**, UW-Madison Geography Graduate Symposium 2020
- **Undergraduate Mentor**, Department of Geography, UW-Madison (2019 –)
- **Member**: IEEE, ACM, ASPRS, AAG