

Di Zhu

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EDUCATION

- 2014 – Now ■ **Ph.D. Candidate** Cartography and Geographic Information Science.
Institute of Remote Sensing and Geographical Information Systems, Peking University.
- 2017 – Now ■ **Research Assistant**
School of Earth and Space Sciences, Peking University.
- 2018 – Now ■ **Visiting Researcher**
Department of Civil, Environmental & Geomatic Engineering, University College London.
- 2010 – 2014 ■ **B.S.** Geographic Information Systems.
School of Earth and Space Sciences, Peking University.
- 2011 – 2014 ■ **B.S.** Economics.
National School of Development, Peking University.

ACADEMIC EXPERIENCES

Peer-reviewed Journal Papers

- 1 Zhu, D., Cheng, X., Zhang, F., Yao, X., Gao, Y., & Liu, Y. (2019). Spatial interpolation using conditional generative adversarial neural networks. *International Journal of Geographical Information Science*. (accepted). 🌐 <https://doi.org/10.1080/13658816.2019.1599122>
- 2 Zhu, D., Huang, Z., Shi, L., Wu, L., & Liu, Y. (2018). Inferring spatial interaction patterns from sequential snapshots of spatial distributions. *International Journal of Geographical Information Science*, 4(32), 783–805. 🌐 <https://doi.org/10.1080/13658816.2017.1413192>
- 3 Zhu, D., Wang, N., Wu, L., & Liu, Y. (2017). Street as a big geo-data assembly and analysis unit in urban studies: a case study using beijing taxi data. *Applied Geography*, 86, 152–164. 🌐 <https://doi.org/10.1016/j.apgeog.2017.07.001>
- 4 Zhang, S., Zhu, D., Yao, X., Cheng, X., He, H., & Liu, Y. (2018). The scale effect on spatial interaction patterns: an empirical study using taxi od data of beijing and shanghai. *IEEE Access*, 6, 51994–52003. (Co-first author & corresponding author). 🌐 <https://doi.org/10.1109/ACCESS.2018.2869378>
- 5 Zhu, D. & Liu, Y. (2018a). Modelling irregular spatial patterns using graph convolutional neural networks. *arXiv preprint*, arXiv:1808.09802. 🌐 <https://arxiv.org/abs/1808.09802>
- 6 Yao, X., Zhu, D., Gao, Y., Wu, L., Zhang, P., & Liu, Y. (2018). A stepwise spatio-temporal flow clustering method for discovering mobility trends. *IEEE Access*, 6, 44666–44675. 🌐 <https://doi.org/10.1109/ACCESS.2018.2864662>

- 7 Yao, X., Wu, L., Zhu, D., Gao, Y., & Liu, Y. (2018). Visualizing spatial interaction characteristics with direction-based pattern maps. *Journal of Visualization*, 1–15. 
<https://doi.org/10.1007/s12650-018-00543-4>
- 8 Wu, L., Cheng, X., Kang, C., Zhu, D., Huang, Z., & Liu, Y. (2018). A framework for mixed use decomposition based on temporal activity signatures extracted from big geo-data. *International Journal of Digital Earth*. 
<https://doi.org/10.1080/17538947.2018.1556353>
- 9 Zhu, D. & Liu, Y. (2017). An incremental map-matching method based on road network topology. *GEOMATICS AND INFORMATION SCIENCE OF WUHAN UNIVERS*, 42(1), 77–83. 
<http://ch.whu.edu.cn/CN/10.13203/j.whugis20150016>
- 10 Liu, Y., Zhan, Z., Zhu, D., Chai, Y., Ma, X., & Wu, L. (2018). Incorporating multi-source big geo-data to sense spatial heterogeneity patterns in urban space. *GEOMATICS AND INFORMATION SCIENCE OF WUHAN UNIVERS*, 43(3), 327–335. 
<https://doi.org/10.13203/j.whugis20170383>
- 11 Zhu, D., Zhang, F., Wang, S., Cheng, X., Wang, Y., Huang, Z., & Liu, Y. (2019). Understanding place characteristics in geographic contexts through graph convolutional neural networks. *Annals of American Association of Geographers*. (under review).
- 12 Zhu, D., Yao, X., Cheng, X., Zhang, F., Zhang, Y., Huang, Z., & Liu, Y. (2019). Estimating spatial configuration of intra-urban human activities using graph convolutional neural networks. *EPJ Data Science*. (under review).
- 13 Zhang, F., Wu, L., Zhu, D., & Liu, Y. (2019). Social sensing from street-level imagery: a case study in learning urban mobility patterns. *ISPRS Journal of Photogrammetry and Remote Sensing*. (under review).

Conferences and Invited Talks

- 1 Zhu, D., Cheng, T., & Liu, Y. (2019). Geo-propagation from incomplete spatial distribution data: a case study of house price estimation. In *Proceedings of the 27th conference on gis research uk (oral presentation)*. Newcastle upon Tyne, United Kingdom.
- 2 Zhu, D. (2019, February). Inferring flow patterns from sequential snapshots of spatial distributions. Invited talk at *Geospatial Seminar, University College London*.
- 3 Wang, Y., Zhu, D., Yin, G., Huang, Z., & Liu, Y. (2019). Investigating local travel speed with spatial network structures and properties. In *Proceedings of the 2nd international conference on urban informatics (oral presentation)*. Hong Kong, China.
- 4 Zhu, D. & Liu, Y. (2018b). Modelling spatial patterns using graph convolutional networks (Short Paper). In *10th international conference on geographic information science (oral presentation)*. Melbourne, Australia. doi:10.4230/LIPIcs.GISCIENCE.2018.73
- 5 Zhu, D., Shi, L., Wang, Y., Cheng, X., & Liu, Y. (2017). Infer spatial interaction patterns from spatial distributions. In *The 25th international conference on geoinformatics (oral presentation)*. Buffalo, USA.
- 6 Zhu, D., Wang, N., & Liu, Y. (2016). Street perspective: a novel spatial unit in urban social sensing. In *17th international symposium on spatial data handling (oral presentation)*. Beijing, China.
- 7 Zhu, D. & Liu, Y. (2016). The distance effect in spatial interaction and spatial similarity: a big data view of tobler's first law. In *The 33rd international geographical congress (oral presentation)*. Beijing, China.

PROJECTS

- 2019.01-2023.12 ■ **The Major Program of the National Natural Science Foundation of China (no. 41830645)**
Theoretical and analytical methods of spatial interaction networks in geo-spatial big data (CI).
- 2017.01-2021.12 ■ **National Science Fund for Distinguished Young Scholars (no. 41625003)**
Geo-spatial models and analytical methods (SI).
- 2017.07-2021.07 ■ **The National Key Research and Development Program of China (no. 2017YFB0503600)**
Big geo-data mining and spatio-temporal pattern discovery (SI).
- 2018.10-2019.10 ■ **The China Scholarship Council funding (no. 201806010077)**
Modelling spatial heterogeneity and spatial interactions from the big geo-data perspective (PI).
- 2015.01-2016.12 ■ **National Natural Science Foundation of China (no. 41428102)**
Spatial optimizing of urban facilities to mitigate traffic congestion: a case study of Beijing (SI).
- 2013.01-2016.12 ■ **National Natural Science Foundation of China (no. 41271386)**
Investigating human mobility pattern based on massive spatio-temporal data (SI).

SELECTED AWARDS

- 2019 ■ **Travel Award**, Applied Geography Speciality Group, Annual Meeting of American Association of Geography
 ■ **Early Career Scholarship**, GIS Research UK
- 2018 ■ **Outstanding Rookies Award**, College GIS Forum, China
 ■ **Presidential Scholarship**, Peking University
 ■ **Outstanding Student Award**, Peking University
 ■ **State Scholarship Fund of China**, China Scholarship Council
- 2017 ■ **Tang Lixin Scholarship**, Peking University
 ■ **Research Assistant Scholarship**, Peking University
- 2016 ■ **Excellent in Academics Award**, Peking University
- 2015 ■ **Individual Scholarship for Outstanding Scientific Research**, Peking University
- 2014 ■ **Longruan Tech Scholarship**, Beijing LongRuan Technologies Inc.
- 2012 ■ **Founder Scholarship**, Peking University
- 2011 ■ **54 Scholarship**, Peking University

RESEARCH INTERESTS

Geospatial modelling; Social sensing; Spatiotemporal data mining; Applied artificial intelligence

SKILLS

- Languages ■ Mandarin Chinese; English.
- Programming ■ Python, SQL, ~~W~~TeX, Pytorch, C#,ASP.NET, Java, C/C + + , HTML, CSS, JavaScript, ArcGIS, QGIS.

SKILLS (continued)

Misc. ■ Graphic design, Photography, Violin, Guitar, Modern drama creation.

REFERENCES

Yu Liu
Professor
Peking University
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