Dr Chen ZHONG

Associate Professor in Urban Analytics
The Bartlett Centre for Advanced Spatial Analysis, University College London
First Floor, 90 Tottenham Court Road, London, W1T 4TJ
Email: c.zhong@ucl.ac.uk

I. RESEARCH AND TEACHING INTERESTS

Spatial data mining, spatiotemporal visualisation, complex network analysis, data-driven methods for urban and transport planning. In particular, urban mobility analysis and modelling using emerging location data.

II.A HIGHER EDUCATION QUALIFICATIONS

2011 – 2014	**Doctor of Science**, Department of Architecture, **ETH Zürich**, Switzerland
	Dissertation: *Urban Transformation Towards Polycentricity: Detecting Functional Urban Changes in Singapore from Transportation Data*
2008 – 2010	**MEng in Applied Computer Science**, State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing, **Wuhan University**, China
2004 – 2008	**Double BA of Engineering**, **Wuhan University**, China

II.B HIGHER EDUCATION QUALIFICATIONS (OTHER EDUCATION)

2018	**PGCAP and HEA Fellow** (PR137498), **King's College London**, UK
2010	**Exchange Student** funded by ERASMUS MUNDUS programme - TANDEM Master mobility program Scholarship, **Ecole Centrale de Nantes**, France

III. ACADEMIC AND PROFESSIONAL POSTS

2016 – present	**Lecturer in Spatial Analysis**, Department of Geography, King's College London, UK
2014 – 2016	**Research Associate**, Centre for Advanced Spatial Analysis, UCL, London, UK.
2011 – 2014	**Student Researcher**, Future Cities Laboratory, Singapore - ETH Centre, Singapore.
2010	**Research Assistant**, AVIZ – INRIA, Saclay - Île-de- France, France.

IV. ACADEMIC SERVICES (INTERNATION)

2016 – present	**Independent Expert Evaluator** for European Commission (reviewing large grant proposals)
2020 -	**Review Editor** for Smart Technologies and Cities from 2020
2020 -	**Guest Editor** of GIS and Urban Data Science – Special Issue in Annals of GIS
2019	**Program Committee** of SpatialDI2020
2019	**Convener** of OpenStreetMap Mapathon at European Geosciences Union April 2019
2018 – present	**Program Committee** of SmartGeoApps workshop 2019, in the ISPRS Geospatial Week
2012 – Present	**Program Committee** of the international conference on information visualization (IV).
2016 – 2017	**Program Committee** of UIC 2017 (Conference on Ubiquitous Intelligence and Computing)
2016 – 2017	**Program Committee** of ICCS 2017(Conference on Complex Systems)
2017	**Reviewer** of CHIST-ERA ERA-NET, a consortium of research funding organisations.
2017	**Academic Advisory Board** and **Chair** of urban analysis session: at City + conference 2017
2017	Session Chair of AAG annual meeting 2017
2016 – Present	**Review Editor** in Urban Science, Journal of Frontiers in Built Environment
2016	**Guest editor** of a special issue in the Journal of Multimedia Tools and Applications.
2014 – 2016	**Research Fellow** at the Beijing City Lab.
2012 – Present	**Reviewer** of the *Annals of the American Association of Geographers*, *Journal of Transport Geography*, *Journal of Transportation, International Journal of Geographical Information Science, Journal of Chaos, Solitons & Fractals, Journal of Advances in Engineering Software*, etc.

V. FINDINGS AND RESEARCH PROJECTS

2021 – 2026	ERC-Starting Grant, **realTRIPS: Redefining Variability: Evaluating Land Use and Transport Impacts on Urban Mobility Patterns**, 2021-2025. (CZ PI for the overall project, ~€1.468M = ~ £1.338M, 2 * 3-year PDRAs and 2 PhD students to be hired)
2019 – 2022	JPI Urban Europe and the National Natural Science Foundation of China (NSFC)，The Pilot Call Sustainable and Liveable Cities and Urban Areas. (CZ PI for KCL, 882K EUR of which 169K EUR to KCL) **SEMITRI - SustaInable Mobility and Equality in mega-ciTy RegIons: patterns, mechanisms and governance.** The overall consortium led by UCL (Batty, M) with Co-Is from 7 research institutes in China, the Netherlands and the UK.
2019 – 2022	ESRC LISS-DTP Collaborative (CASE) Studentships 2019 entry. (CZ, PI on the academic application and Primary supervisor of PhD student) **Improving efficiency and equity of ambulance services through advanced demand modelling. (a.b £60K)** co-supervised with Judith Green from KCL and Dr Leanne Smith from London Ambulance Service.
2017 – 2019	Tsinghua University Open Fund. (PI for KCL and the overall project. 200k RMB (~ £23K)) **Data-informed evaluation method for urban planning: a comparative study of Shenzhen.** (No. K-17014-01)
2020 - 2021	[internal] King's Together Scheme, **A unified framework for autonomous monitoring of urban pollution and mental health**, Joint PI with Daniel Schillereff and others. ~£20K, 2019
2019 - 2020	[internal] Department research fund, **A real-time air quality monitoring network for cyclists in London**, Schillereff D(PI), O'Shea F(PI), Zhong C(Co-I) and others, ~£2k, 2019
2018 – 2019	[internal] King's Together Scheme (EPSRC Capital Award for ECRs) – "**Wiring the Smart City: Autonomous Monitoring of Safety and Health in London**". Joint PI. £25K
2017 – 2018	[internal] King's Together Scheme. **Developing the infrastructure for the Social Sciences for Urban Public Health Institute (SUPHI).** Joint PI. £20K
2017 – 2018	[internal] King's Together Scheme. **Mapping Global Object Networks and Diasporas**. Joint PI. **£19.9K**.
2016 – 2017	[internal] Faculty research fund. **Characterising urban space using emerging urban mobility data.** Position: PI £11.6K (A research assistant hired 10.5 hr a week for 28 weeks)
2015 – 2017	[participated]FAPESP-ESRC research project. **RESOLUTION - REsilient Systems for Land Use TransportaTION**. Position: former research associate & advisor since 2016
2014 – 2016	[participated] ERC research project. **MECHANICITY - Morphology, Energy and Climate Change in the City.** Research associate

TEACHING AND SUPERVISION

Teaching (at KCL since 2016/17) with (year [# students])

- **7CUSMSDA Spatial Data Analysis** [**Convenor**] (2017/18 [11], 2018/19 [25]) 10 hours lecture + praticals.
- **6SSG3077 Applied Geocomputation & Spatial Analysis** [**Convenor**] (2016/17 [11], 2017/18 [9] 2018/19 [12] 2019/20 [15]) 14 hours lecture and 14 hours of Practical;
- **6SSG3040 Directed Readings** [supervision] (2016/17 [1], 2017/18[2] 2018/19 [1])
- **6SSG3061 Current research in Geography** [Co-taught] (2016/17 [25], 2017/18[25]) 4 hours lecture.
- **5SSG2060** Spatial Analysis [Co-taught] (2017/18 [14], 2018/19[21]) 10 hours of Lecture and 10 hours of Practical;
- **5SSG2047** Field research in human geography: Field trip to Hong Kong [Co-taught] (2016/17 [38], 2017/18 [37], 2018/19[38]) 9 hours of lecture, 7 days of field trips.
- **5SSG2063** Research tutorials. [Co-taught] (2016/17 [7]) 10 hours of tutorial
- **4SSG1008** Geography Tutorials in [Co-taught] (2017/18 [13]) 10 hours of tutorial
- **4SSG1016** Geography in Action [Co-taught] (2016/17 [25], 2017/18[25] 2018/19 [25]) 4 hours of lecture.

- **Geography UG dissertations** (year [# students]: 2016/17 [4], 2017/18[6] 2018/19 [4] 2019/20 [5]))
- **Geography PGT dissertations** (2016/17 [4], 2017/18[6] 2018/19[5]) & **CUSP PGT Dissertation Project** (2018/19 [1] 2019/20 [2]).

Current PhD Students

- Samuel Murphy [First supervisor] (10/2019–, **LISS-DTP studentship**) Project: *Improving Efficiency and Equity of Ambulance Services through Advanced Demand Modelling*
- Bowen Zhang [Second supervisor] (10/2019–, **K-CSC PhD studentship**) Project: *Modelling Urban Clusters in Mega-city Region based on Human Mobility Pattern: A Case study of The Great Bay Area* [supervised with Naru Shiode]
- ~~Lina Zhou[First supervisor] (02/2020 , **K-CSC PhD studentship**) Project: *Exploring Spatial Structure of Urban Agglomerations through Social Media Data: A Case Study of Guangdong-Hong Kong-Macao Greater Bay Area"* [secondary supervisor TBC]~~
- Seungwon Eo, Simulating [Second supervisor] (01/2018–, self-funded). Project: *Agents Shaping Environment: The application to urban crime analysis* (primary supervisor: Naru Shiode)

PUBLICATIONS: JOURNAL ARTICLES (IN REVERSE CHRONOLOGICAL ORDER)[GOOGLE CITATIONS: 961, H-INDEX 14]

20. Giannotti, M., Barros, J., Tomasiello, D. B., Smith, D., Pizzol, B., Santos, B. M., **Zhong, C**., Shen, Y., Marques, E. & Batty, M. 2021. Inequalities in transit accessibility: Contributions from a comparative study between Global South and North metropolitan regions. Cities, 109, 103016.

20. Cao, J., Li, Q., Tu, W., Gao, Q., Cao, R. & **Zhong, C.** 2021. Resolving urban mobility networks from individual travel graphs using massive-scale mobile phone tracking data. Cities, 110, 103077.

19. Smith, D., Shen, Y., Barros, J., **Zhong, C.,** Batty, M., Giannotti, M. A Compact City for the Wealthy? Employment Accessibility Inequalities between Occupational Classes in the London Metropolitan Region 2011. *Journal of Transport Geography*. 86, p.102767.

18. Zhu, T., Tu, W., Yue, Y., **Zhong, C.,** Zhao, T., Li, Q. & Li, Q. (2020) 利用地理标签数据感知城市活力, Cehui Xuebao/Acta Geodaetica et Cartographica Sinica. 49, 3, p. 365-374

17. Shen, Y., Karimi, K., Law, S. and **Zhong, C.** (2019). Physical co-presence intensity: Measuring dynamic face-to-face interaction potential in public space using social media check-in records. *PLOS ONE* **14**(2): e0212004.

16. Maeda, T. N., Shiode, N., **Zhong, C**., Mori, J. and Sakimoto, T. (2019). Detecting and understanding urban changes through decomposing the numbers of visitors' arrivals using human mobility data. *Journal of Big Data* 6(1):4.

15. **Zhong, C**., Zeng, S., Tu, W. and Yoshida, M. (2018). Profiling the spatial structure of London: from individual tweets to aggregated functional zones. *ISPRS International Journal of Geo-Information* **7**(10): 386.

14. Sulis, P., Manley, E., **Zhong, C.** and Batty, M. (2018). Using mobility data as a proxy for measuring urban vitality. *Journal of Spatial Information Science* **16**: 137-162.

13. Manley, E., **Zhong, C.** and Batty, M. (2018). Spatiotemporal variation in travel regularity through transit user profiling. *Transportation* **45**(3): 703-732.

12. Li, X., Lv, Z., Zheng, Z., **Zhong, C.,** Hijazi, I. H. and Cheng, S. (2017). Assessment of lively street network based on geographic information system and space syntax. *Multimedia Tools and Applications* **76**(17): 17801-17819.

11. **Zhong, C.,** Schläpfer, M., Müller Arisona, S., Batty, M., Ratti, C. and Schmitt, G. (2017). Revealing centrality in the spatial structure of cities from human activity patterns. *Urban Studies* **54**(2): 437-455.

10. **Zhong, C.,** Batty, M., Manley, E., Wang, J., Wang, Z., Chen, F. and Schmitt, G. (2016). Variability in regularity: Mining temporal mobility patterns in London, Singapore and Beijing using smart-card data. *PLOS One* **11**(2): e0149222.

9. Reades, J., **Zhong, C.,** Manley, E., Milton, R. and Batty, M. (2016). Finding pearls in London's oysters. *Built Environment* **42**(3): 365-381.

8. Wang, J., Tsapakis, I. and **Zhong, C.** (2016). A space–time delay neural network model for travel time prediction.

Engineering Applications of Artificial Intelligence **52**: 145-160.

7. Li, X., Hijazi, I., Koenig, R., Lv, Z., **Zhong, C.** and Schmitt, G. (2016). Assessing essential qualities of urban space with emotional and visual data based on GIS technique. *ISPRS International Journal of Geo-Information* **5**(11): 218.

6. Lv, Z., **Zhong, C.** and Jiang, D. (2016). Guest editorial: smart transportation based on multimedia data mining. *Multimedia Tools and Applications* **75**(24): 17443-17448. (Guest editor of the special issue)

5. **Zhong, C.,** Manley, E., Arisona, S. M., Batty, M. and Schmitt, G. (2015). Measuring variability of mobility patterns from multiday smart-card data. *Journal of Computational Science* **9**: 125-130.

4. **Zhong, C.,** Arisona, S. M., Huang, X., Batty, M. and Schmitt, G. (2014). Detecting the dynamics of urban structure through spatial network analysis. *International Journal of Geographical Information Science* **28**(11): 2178-2199.

3. **Zhong, C.,** Huang, X., Arisona, S. M., Schmitt, G. and Batty, M. (2014). Inferring building functions from a probabilistic model using public transportation data. *Computers, Environment and Urban Systems* **48**: 124-137.

2. Müller Arisona, S., **Zhong, C.,** Huang, X. and Qin, R. (2013). Increasing detail of 3D models through combined photogrammetric and procedural modelling. *Geo-spatial Information Science* **16**(1): 45-53.

1. Lv, Z., Chen, G., **Zhong, C.,** Han, Y. and Qi, Y. Y. (2012). A framework for multi-dimensional webGIS based interactive online virtual community. *Advanced Science Letters* **7**(1): 215-219.

PUBLICATIONS: BOOK CHAPTERS

4. **Zhong, C.**, Luan, L., Shen, Y., Tu, W., Li, X. (2020) *Profiling Rapid Urban Transformation through Urban Mobility Data in Shenzhen*. In *Seeing China's Transformations through Big Data: The Geography of Mobility*, Wellbeing and Development, Wu, W.J, Wang, Y.M (eds) London: Routledge.

3. Tu, W., Wei, C., Zhao, T., Li, Q., **Zhong, C.** & Li, Q. 2020. Uncovering Online Sharing Vehicle Mobility Patterns from Massive GPS Trajectories. Spatial Synthesis. Springer.

2. Cowley, R., Caprotti, F., Ferretti, M. and **Zhong, C.** (2018). *Ordinary Chinese Smart Cities: The Case of Wuhan*. In *Inside Smart Cities: Place, Politics and Urban Innovation*. K. Andrew, C. Federico and F. Caprotti. London, Routledge**:** 45-64.

1. **Zhong, C.,** Wang, T., Zeng, W. and Arisona, S. M. (2012). *Spatiotemporal visualisation: A survey and outlook*. In *Digital Urban Modeling and Simulation*. M. A. Stefan, A. Gideon, H. Jan and W. Peter. Berlin, Springer**:** 299-317.

CONFERENCE PRECEDING (FULL PAPER ONLY)

9. Zhu, Z., Yang, J., Zhong, C., Seiter, J. and Tröster, G. (2015). Learning functional compositions of urban spaces with crowd-augmented travel survey data in Proceedings of the 23rd SIGSPATIAL International Conference on Advances in Geographic Information Systems. Seattle, Washington, ACM: 1-10.

8. Murcio, R., **Zhong, C.,** Manley, E. and Batty, M. (2015). *Identifying risk profiles in the London's public transport system*. In *Proceedings of the 14th International Conference on Computers in Urban Planning and Urban Management*, Cambridge, Massachusetts, MIT.

7. **Zhong, C.,** Arisona, S. M. and Schmitt, G. (2014). *A visual analytics framework for large transportation datasets* In *Proceedings of the 19th International Conference on Computer-Aided Architectural Design Research in Asia*. Kyoto, Japan. **Best presentation award.**

6. Schubiger-Banz, S., Arisona, S. M. and **Zhong, C.** (2014). *Enhancing photogrammetric 3d city models with procedural modeling techniques for urban planning support*. *IOP Conference Series: Earth and Environmental Science*. 18**:** 012169.

5. **Zhong, C.,** Huang, X., Arisona, S. M. and Schmitt, G. (2013). *Identifying Spatial Structure of Urban Functional Centers Using Travel Survey Data: A Case Study of Singapore*. *Proceedings of the First ACM SIGSPATIAL International Workshop on Computational Models of Place*. Orlando FL, USA, ACM**:** 28-33.

4. **Zhong, C.,** Wang, T., Cairns, S. and Arisona, S. M. (2012). *Using an Interactive Dymaxion Map to Convey Research Information through Visualization*. *2012 16th International Conference on Information Visualisation*: 422-425.

3. Aschwanden, G., **Zhong, C.,** Papadopoulou, M., Vernay, D. G., Arisona, S. M. and Schmitt, G. (2012). *System design proposal for an urban information platform: a systems proposal. Proceedings of the 30th eCAADe Conference*, 665-673.

2. Zeng, W., **Zhong, C.,** Anwar, A., Arisona, S. M. and McLoughlin, I. V. (2012). *MetroBuzz: Interactive 3D visualization of spatiotemporal data*. *Computer & Information Science (ICCIS), 2012 International Conference on Computer & Information Science (ICCIS),* Citeseer. 1**:** 143-147.

1. **Zhong, C.,** Zaki, C., Tourre, V. and Moreau, G. (2010). *Event-based semantic visualization of trajectory data in urban city with a space-time cube*. *Proceedings of the 3rd WSEAS international conference on Visualization, imaging and simulation, World Scientific and Engineering Academy and Society (WSEAS), Stevens Point, Wisconsin, USA, VIS*. 10**:** 99-105.

PANELLIST

Panellist on project workshop - *Smart Cities: 'Provincializing' the global urban age in India and South Africa*, 27th April 2018 at King's College London, London

Panellist on a special panel session: *Geography Data Science*, AAG Annual Meeting, 5th April 2017, Boston, USA

Panellist on a public event - *Social behaviour, data and mapping*, a late debate organised by the London Transport Museum. 28th July 2016, London, UK

INVITED TALKS & GUEST LECTURER

Redefining Variability: some thoughts on urban analytics using human mobility data, ITC-GIP Research Seminar on April 22, University of Twente (UT), The Netherlands. [online]

Human mobility data for urban analytics, Master's Class at the 16th International Conference on Computers in Urban Planning and Urban Management, 8th July, Wuhan China

Variability in Regularity: A comparative study of cities using urban mobility data. Smart Mobility Workshop at Beijing Jiaotong University, 26th June 2017, Beijing, China.

Big data-based transportation-planning applications. Hubei Geographical Information Centre, 10th July 2017, Wuhan, China.

Urban analytics using human mobility data, Shenzhen Key Laboratory of Spatial Smart Sensing and Services, Shenzhen University, 17th July 2017, Shenzhen, China.

Variability in Regularity: A comparative study of cities using urban mobility data at COST Acton workshop, 11th November 2016, London, UK

Measuring variability of mobility patterns from multiday smart card data. Invited talk given at the First Transport for London Research Forum organised by Transport for London (TFL), London, UK, 11the September 2015.

Smart-card data analysis. Big Data Seminar organised by Transport Statistics User Group (TSUG), 21st January 2015, London, UK

Urban analytics using human mobility data at Data Science Talk Series- Goldsmiths, University of London, 23rd March 2016, London, UK

CONFERENCE PRESENTATIONS (POST-DOCTORAL DEGREE)

Zhong, C., Yang, J., Shen, Y., and Tu, W. (2019). *Data for Informal Cities: Land Use Classification Using Twitter Data in Nairobi*. *16th International Conference on Computers in Urban Planning and Urban Management*

Zhong, C., (2019) *Combining social media and remote sensing techniques for natural hazard impact assessments on urban infrastructure*, The EGU General Assembly 2019 April, Vienna, Austria. [poster]

Zhong, C., Taylor, F., Millington, J., Malamud, BD. (2019) *Combining social media and remote sensing techniques for natural hazard impact assessments on urban infrastructure*, The EGU General Assembly 2019 April, Vienna, Austria. [poster]

Zhong, C., Ferretti, M. (2017) *Visual analytics framework for twitter data*, RGS Annual International Conference, 28th August 2017, London UK.

Zhong, C, Manley, E., Patrizia, S (2017) *Detecting interlinked urban functions from mobility motifs*, GISRUK2017, 18th – 20th April 2017, Manchester, UK. [Poster presentation]

Zhong, C, Batty, M., Barros, J. (2017) *Location-based accessibility measure*: 2017 AAG Annual Meeting, 5th – 9th April 2017, Boston, US

Zhong, C., Schmit, G., Batty M. (2014). *A spatial network model for detecting the emerging spatial structure of urban movement: a case study of Singapore*. Paper presented at Symposium on Applied Urban Modelling (AUM2014), 1-3rd April 2014, Cambridge, UK