

HUANFA CHEN

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EDUCATION

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| Doctor of Philosophy <i>Geographic Information Science</i> University College London | Sep 2014 – Feb 2019 London, UK |
| Master of Science <i>Geographic Information Systems and Cartography</i> Peking University | Sep 2011 – July 2014 Beijing, China |
| Bachelor of Science <i>Chemistry</i> Peking University | Sep 2007 – July 2011 Beijing, China |

WORK EXPERIENCE

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| Lecturer in Spatial Data Science Centre for Advanced Spatial Analysis, UCL <ul style="list-style-type: none">Lecture in postgraduate modules and supervise MSc and PhD projectsDeputy Department Tutor (since 2020) | Oct 2020 – Present London, UK |
| Teaching Fellow in Spatial Data Science Centre for Advanced Spatial Analysis, UCL <ul style="list-style-type: none">Lecture in postgraduate modules and supervise MSc and PhD projectsDeputy Department Tutor (since 2020) | Feb 2019 – Present London, UK |
| Guest Lecturer School of Architecture and Cities, University of Westminster <ul style="list-style-type: none">Lecture in GIS and spatial analysis | Jan 2019 – Present London, UK |
| Teaching assistant Department of Civil, Environmental and Geomatic Engineering <ul style="list-style-type: none">Lectured in “Agent-Based Simulation” as part of the Msc Course Spatio-Temporal Data MiningLed tutorials in R/Python/NetLogo | Oct 2014 – Jan 2019 London, UK |
| Research assistant Department of Civil, Environmental and Geomatic Engineering <ul style="list-style-type: none">Member of the EPSRC-funded project ‘Crime, Policing and Citizenship’Developed algorithms for predicting spatio-temporal crime hot-spots and dashboards | Oct 2015 – Jan 2019 London, UK |

RESEARCH INTERESTS

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| Geospatial machine learning Applications in crime hotspot mapping, transport studies, public health, fire management |
| Spatial optimisation Location-allocation analysis |
| Spatial agent-based models Applications in crime prevention and policing |

Refereed journals

1. Huanfa Chen, Alan T. Murray, and Rui Jiang, Open-source approaches for location cover models: capabilities and efficiency, *Journal of Geographical Systems* **23**, 361–380 (2021).
2. Huanfa Chen, Tao Cheng, and Xinyue Ye, Designing efficient and balanced police patrol districts on an urban street network, *International Journal of Geographical Information Science* **33**, 269–290 (2019).
3. Huanfa Chen, Tao Cheng, and John Shawe-Taylor, A Balanced Route Design for Min-Max Multiple-Depot Rural Postman Problem (MMMDRPP): a police patrolling case, *International Journal of Geographical Information Science* **32**, 169–190 (2018).
4. Huanfa Chen, Tao Cheng, and Sarah Wise, Developing an online cooperative police patrol routing strategy, *Computers, Environment and Urban Systems* **62**, 19–29 (2017).
5. Nilufer Sari Aslam, Mohamed R. Ibrahim, Tao Cheng, Huanfa Chen, and Yang Zhang, ActivityNET: Neural networks to predict public transport trip purposes from individual smart card data and POIs, *Geo-spatial Information Science*, 1–11 (2021).
6. Yibin Ren, Huanfa Chen, Yong Han, Tao Cheng, Yang Zhang, and Ge Chen, A hybrid integrated deep learning model for the prediction of citywide spatio-temporal flow volumes, *International Journal of Geographical Information Science* **34**, 802–823 (2020).
7. Yuerong Zhang, Stephen Marshall, Mengqiu Cao, Ed Manley, and Huanfa Chen, Discovering the evolution of urban structure using smart card data: The case of London, *Cities* **112**, 103157 (2021).
8. Yan Qiao, Huanfa Chen, Yiyang Lin, and Jianbin Huang, Controllable synthesis of water-soluble gold nanoparticles and their applications in electrocatalysis and surface-enhanced raman scattering, *Langmuir* **27**, 11090–11097 (2011).
9. Yan Qiao, Huanfa Chen, Yiyang Lin, Zhiyi Yang, Xinhao Cheng, and Jianbin Huang, Photoluminescent lanthanide-doped silica nanotubes: Sol-Gel transcription from functional template, *Journal of Physical Chemistry C* **115**, 7323–7330 (2011).
10. Yan Qiao, Yiyang Lin, Zhiyi Yang, Huanfa Chen, Shaofei Zhang, Yun Yan, and Jianbin Huang, Unique temperature-dependent supramolecular self-assembly: From hierarchical 1D nanostructures to super hydrogel, *Journal of Physical Chemistry B* **114**, 11725–11730 (2010).

Book chapters

1. Huanfa Chen and Alan T. Murray, Open-source approaches for location coverage modelling, in *Open Source Geospatial Science for Urban Studies. Lecture Notes in Intelligent Transportation and Infrastructure.*, edited by Amin Mobasheri (Springer, Cham, 2021) pp. 117–129.

Papers under review

1. Huanfa Chen, Thomas Keel, Mengdie Zhuang, and Nilufer Sari Aslam, Trip purpose prediction using non-sensitive data: a machine learning perspective, *Transportation* **Submitted** (2021).

Conference proceedings

1. Huanfa Chen and Yang Zhou, Forecasting high-street footfall in real time, in *Proceedings of Geographical Information Science Research - UK 2020* (Online, 2020).
2. Huanfa Chen, Yang Zhang, and Tao Cheng, Locating stations in bike-sharing service: a special maximal covering location problem, in *Proceedings of Geographical Information Science Research - UK 2019* (Newcastle, UK, 2019).
3. Huanfa Chen and Tao Cheng, Modelling Police Patrol Routing as Min-Max Postmen Problems, in *Proceedings of Geographical Information Science Research - UK 2017* (Manchester, UK, 2017).
4. Huanfa Chen and Tao Cheng, Designing police patrol districts on street network, in *Proceedings of the 14th International Conference of GeoComputation* (Leeds, UK, 2017).
5. Yajie Zhu, Qi Li, and Huanfa Chen, System Design of a Simulation System for Hazardous Chemicals Leakage, in *Proceedings of the 12th International Conference of GeoComputation* (Wuhan, China, 2013).

6. Huanfa Chen, Qi Li, Yajie Zhu, and Hamed Karimian, Research of 3D simulation system for chemical accidents based on atmospheric dispersion model, in *Proceedings of International Conference on Earth Science and Environmental Protection 2013* (Kunming, China, 2013).
7. Hamed Karimian, Qi Li, and Huanfa Chen, Correlation between AOD and Pm2.5 over Tehran Iran, in *Proceedings of International Conference on Earth Science and Environmental Protection 2013* (Kunming, China, 2013).

Project reports

1. Tao Cheng, Kate Bowers, Paul Longley, John Shawe-Taylor, Toby Davies, Gabriel Rosser, Sarah Wise, Chris Gale, Monsuru Adepeju, Jianan Shen, Huanfa Chen, Dawn Williams, Kira Kempieńska, and Artemis Skarlatidou, *CPC: Crime, Policing and Citizenship – Intelligent policing and big data*, Tech. Rep. (UCL SpaceTimeLab, London, 2016).

Software

Other significant publications

RESEARCH SUPERVISION

1. University College London, UK, 2019 -

(a) PhD/EngD students (As co-supervisors)

- i. Xiaowei Gao (PhD Geographical Information Science, 2020 –)
 - Research area: Spatio-temporal analytics of shared bicycle usage

(b) Master students (selected MSc/MRes projects)

- i. Lingru Feng (MSc Spatial Data Science and Visualisation, 2020 – 2021)
 - Thesis: Comparing Floating Catchment Area Methods for Measuring Spatial Accessibility to COVID-19 Vaccination Service in England
- ii. Chenxi Zhao (MSc Spatial Data Science and Visualisation, 2020 – 2021)
 - Thesis: The relationship between covid-19 and socio-demographic in London: the three lockdowns in 2020
- iii. Huaming Yan (MSc Spatial Data Science and Visualisation, 2020 – 2021)
 - Thesis: Using spatial analysis to measure the fire incidents response time in Greater London
- iv. Yutong Xia (MSc Smart Cities and Urban Analytics, 2020 – 2021)
 - Thesis: A Random Effect Bayesian Neural Network (RE-BNN) for Choice Analysis: Predicting Travel Mode Choice Across Multiple Regions
- v. Yixin Huang (MSc Smart Cities and Urban Analytics, 2020 – 2021)
 - Thesis: Research on spatial accessibility and spatial inequality of vaccination sites in England
- vi. Xiaohan Feng (MSc Spatial Data Science and Visualisation, 2020 – 2021)
 - Thesis: Decomposition Analysis of Index of Multiple Deprivation (IMD) Based on Shapley Value
- vii. Xiaomei Ge (MSc Smart Cities and Urban Analytics, 2019 – 2020)
 - Thesis: Looking into home sharing platforms and their influence on local inequality and insecurity: a case study of London
- viii. Chuyin Deng (MSc Spatial Data Science and Visualisation, 2019 – 2020)
 - Thesis: Exploring the influential factors of cases growth of COVID-19 with machine learning techniques
- ix. Zhenzhi Zhang (MSc Spatial Data Science and Visualisation, 2019 – 2020)

- Thesis: Understanding public confidence towards NHS by ordered logistics regression based on survey results
- x. Xiang Zhou (MSc Spatial Data Science and Visualisation, 2019 – 2020)
 - Thesis: Solving vehicle routing problems in supply chain using genetic algorithms: a case study in Shanghai
- xi. Yu Fu (MSc Spatial Data Science and Visualisation, 2019 – 2020)
 - Thesis: A real-time forecast of electricity consumption in residential buildings using machine learning approaches
- xii. Thomas Keel (MSc Spatial Data Science and Visualisation, 2018 – 2019)
 - Thesis: Can we predict why people travel within a city? A case study in Montreal, Canada
- xiii. Yang Zhou (MSc Smart Cities and Urban Analytics, 2018 – 2019)
 - Thesis: Retail centre footfall: planning and forecasting using time series modelling
- xiv. Yafei Ye (MRes Spatial Data Science and Visualisation, 2018 – 2019)
 - Thesis: Understanding residents' attitudes towards services and safety issues by geodemographics based on city survey results
- xv. Yunong Wang (MSc Spatial Data Science and Visualisation, 2018 – 2019)
 - Thesis: Optimal siting and sizing of electric vehicle charging points: a case study in London
- xvi. Maria del pilar Mayora (MSc Smart Cities and Urban Analytics, 2018 – 2019)
 - Thesis: An environmental bicycle level of service index for the Buenos Aires cycle network
- xvii. Ziyi Cheng (MSc Smart Cities and Urban Analytics, 2018 – 2019)
 - Thesis: Exploring the spatial accessibility to green space in the Greater London area

CONFERENCES AND PRESENTATIONS

Invited Presentations

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| Geospatial machine learning: motivations and implications | May 2020 |
| Tianjin University [Online] | |
| Machine learning for urban analytics and transport studies | March 2021 |
| Chinese Academy of Surveying and Mapping [Online] | |

HONORS AND AWARDS

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| UCL Q-Step Internship Programme | 2021 |
| £3,000 Support for supervising the 6-week internship project | UCL, UK |
| • Title: Evaluating and Comparing accessibility to Covid-19 vaccination services across different countries | |
| 2019 AAG Applied Geography Specialty Group Project Development Award | 2019 |
| \$500 Support for the research project: Uncovering the underlying demand of sharing bicycles in urban areas | US |
| 2019 AAG Applied Geography Specialty Group Travel Award | 2019 |
| \$250 Support for attending the AAG annual event | US |
| Roger Tomlinson Prize | 2018 |
| Recognition for the best PhD thesis submitted to UCL which relates to the development of GIS | UCL, UK |
| Finalist of EPSRC Connected Nation Pioneers Award | 2018 |
| Recognition as one of 16 finalists of all UK PhD students due to pioneering research | UK |
| Future Star Award in Shanghai Open Data Apps Competition | 2017 |
| Team leader and algorithm designer | Shanghai, China |
| • Project title: Planning Docking Stations and Optimising Operations in Sharing Bicycle Management | |

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| Travel Fund for Early-Career Researchers Receive €300 to attend a three-day Workshop • Workshop on 'Movement: New Sensors, New Data, New Challenges' | 2017 Leiden University, Netherlands |
| UCL-CSC Joint Research Scholarship Full PhD scholarship, including tuition fees and expenses. | 2014 – 2018 UCL, UK |
| Excellent Prize in 2015 ISPRS-Scientific Initiative Open Data Challenge Top 10/100 teams due to outstanding algorithm performance | 2015 Shenzhen, China |
| Honourable Mention for Best Young Researcher Paper Receiving \$500 in the first International Symposium on Spatiotemporal Computing | 2015 Fairfax, US |
| China National Petroleum Corporation Scholarship in Peking University Receiving ¥5,000 due to outstanding academic performance as top 10/150 students | 2010 Beijing, China |
| Merit Student Awards in Peking University Awarded due to outstanding overall performance as top 20/150 students | 2008 Beijing, China |

TEACHING EXPERIENCE

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| CASA0007: Quantitative Methods Teaching mathematical techniques for describing cities and geographies | 2019 – Present UCL |
| CASA0013: Introduction to Programming for Spatial Analysts) Python-based, covering pandas/geopandas/matplotlib/sklearn | 2019 – Present UCL |
| CASA0006: Data Science for Spatial Systems Statistical & machine-learning methods for spatial analysis | 2019 – Present UCL |
| CASA0009: Spatial Data Capture, Storage, & Analysis Various topics including MySQL, Javascript, web applications | 2019 – Present UCL |
| CASA0011: Agent Based Modelling for Spatial Systems Spatially-explicit agent-based models using NetLogo | 2021 – Present UCL |
| CASA0011: Agent Based Modelling for Spatial Systems Spatially-explicit agent-based models using NetLogo | 2021 – Present UCL |
| CEGE076: Spatio-Temporal Data Mining Leading tutorials of spatio-temporal analytics using R & NetLogo | 2015 – 2021 UCL |
| CEGE082: GIS Principles and Technology Leading tutorials of ArcGIS analysis | 2016 – 2017 UCL |

LEADERSHIP EXPERIENCE

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| General Secretary of Peking University Alumni Association in UK Coordinating 20-person committee and organising 150-person annual meetings. | 2016 – 2018 UK |
| President of London PhD Network Hosting quarterly academic conferences and monthly seminars | 2016 – Present UK |

SKILLS

Languages: Madarin (Native), English (Fluent), Cantonese (Fluent), Teochew (Native)
Programming: Python, R, Java, C++, Linux Bash
Applications: Esri ArcGIS, Microsoft Office Suite, LaTeX, Markdown
Interests: badminton, travel, reading, blogging