

# HUANFA CHEN

[huanfa.chen@ucl.ac.uk](mailto:huanfa.chen@ucl.ac.uk) | <https://huanfachen.github.io/> |  
[linkedin.com/in/huanfa-chen](https://www.linkedin.com/in/huanfa-chen) | [github.com/huanfachen](https://github.com/huanfachen)

## EDUCATION

---

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

## WORK EXPERIENCE

---

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

## RESEARCH INTERESTS

---

<b>Geospatial machine learning</b> Applications in crime hotspot mapping, transport studies, public health, fire management
<b>Spatial optimisation</b> Location-allocation analysis
<b>Spatial agent-based models</b> 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

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

## HONORS AND AWARDS

---

<b>UCL Q-Step Internship Programme</b>	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	
<b>2019 AAG Applied Geography Specialty Group Project Development Award</b>	2019
\$500 Support for the research project: Uncovering the underlying demand of sharing bicycles in urban areas	US
<b>2019 AAG Applied Geography Specialty Group Travel Award</b>	2019
\$250 Support for attending the AAG annual event	US
<b>Roger Tomlinson Prize</b>	2018
Recognition for the best PhD thesis submitted to UCL which relates to the development of GIS	UCL, UK
<b>Finalist of EPSRC Connected Nation Pioneers Award</b>	2018
Recognition as one of 16 finalists of all UK PhD students due to pioneering research	UK
<b>Future Star Award in Shanghai Open Data Apps Competition</b>	2017
Team leader and algorithm designer	Shanghai, China
• Project title: Planning Docking Stations and Optimising Operations in Sharing Bicycle Management	

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

## TEACHING EXPERIENCE

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

## PROFESSIONAL ACTIVITIES

### Professional Membership

<b>Member, the American Association of Geographers</b>	2015 –
--	--------

### Professional Service

<b>Board Member, the Chinese Professionals in Geographic Information Sciences</b>	2021 –
<b>General Secretary, Peking University Alumni Association in UK</b> Coordinating 20-person committee and organising 150-person annual meetings.	2016 – 2018 UK
<b>President, London PhD Network</b> Hosting quarterly academic conferences and monthly seminars	2016 – Present UK

## EDITORSHIP

<b>Editor Board Member, Humanities and Social Sciences Communications</b>	2022 –
<b>Guest Editor on Covid-19 Impact on Human Mobility</b> Geospatial Information Science	2021 – 2022

## REFEREE

---

### Journal

<b>International Journal of Geographic Information Science</b>	2015 – Present
<b>Computers, Environments, and Urban Systems</b>	2018 – Present
<b>Transport Research Part C</b>	2019 – Present

## SKILLS

---

**Languages:** Mandarin (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