HUANFA CHEN

huanfa.chen@ucl.ac.uk | https://huanfachen.github.io/ |
linkedin.com/in/huanfa-chen | github.com/huanfachen

EDUCATION

Doctor of Philosophy | ***Geographic Information Science*** Sep 2014 – Feb 2019
University College London London, UK

Master of Science | ***Geographic Information Systems and Cartography*** Sep 2011 – July 2014
Peking University Beijing, China

Bachelor of Science | ***Chemistry*** Sep 2007 – July 2011
Peking University Beijing, China

WORK EXPERIENCE

Lecturer in Spatial Data Science Feb 2019 – Present
Centre for Advanced Spatial Analysis, UCL London, UK

- Lecture in postgraduate modules and supervise MSc and PhD projects
- Deputy Department Tutor (since 2020)

Guest Lecturer Jan 2019 – Present
School of Architecture and Cities, University of Westminster London, UK

- Lecture in GIS and spatial analysis

Teaching assistant Oct 2014 – Jan 2019
Department of Civil, Environmental and Geomatic Engineering London, UK

- Lectured in "Agent-Based Simulation" as part of the Msc Course Spatio-Temporal Data Mining
- Led tutorials in R/Python/NetLogo

Research assistant Oct 2015 – Jan 2019
Department of Civil, Environmental and Geomatic Engineering London, UK

- Member of the EPSRC-funded project 'Crime, Policing and Citizenship'
- Developed algorithms for predicting spatio-temporal crime hot-spots and dashboards

RESEARCH INTERESTS

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

PUBLICATIONS

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 **Accepted** (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. 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).
6. 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).
7. 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).
8. 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).
9. 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 Research Part C: Emerging Technologies **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 Kempińska, 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. Xiaomei Ge (MSc Smart Cities and Urban Analytics, 2020 – 2021)
         – Thesis: Looking into home sharing platforms and their influence on local inequality and insecurity: a case study of London

      ii. Chuyin Deng (MSc Spatial Data Science and Visualisation, 2020 – 2021)
         – Thesis: Exploring the influential factors of cases growth of COVID-19 with machine learning techniques

      iii. Zhenzhi Zhang (MSc Spatial Data Science and Visualisation, 2020 – 2021)
         – Thesis: Understanding public confidence towards NHS by ordered logistics regression based on survey results

      iv. Xiang Zhou (MSc Spatial Data Science and Visualisation, 2020 – 2021)
         – Thesis: Solving vehicle routing problems in supply chain using genetic algorithms: a case study in Shanghai

      v. Yu Fu (MSc Spatial Data Science and Visualisation, 2020 – 2021)
         – Thesis: A real-time forecast of electricity consumption in residential buildings using machine learning approaches

      vi. Thomas Keel (MSc Spatial Data Science and Visualisation, 2019 – 2020)
         – Thesis: Can we predict why people travel within a city? A cast study in Montreal, Canada

      vii. Yang Zhou (MSc Smart Cities and Urban Analytics, 2019 – 2020)
         – Thesis: Retail centre footfall: planning and forecasting using time series modelling

      viii. Yafei Ye (MRes Spatial Data Science and Visualisation, 2019 – 2020)
         – Thesis: Understanding residents' attitudes towards services and safety issues by geodemographics based on city survey results

      ix. Yunong Wang (MSc Spatial Data Science and Visualisation, 2019 – 2020)
         – Thesis: Optimal siting and sizing of electric vehicle charging points: a case study in London

      x. Maria del pilar Mayora (MSc Smart Cities and Urban Analytics, 2019 – 2020)
         – Thesis: An environmental bicycle level of service index for the Buenos Aires cycle network

      xi. Ziyi Cheng (MSc Smart Cities and Urban Analytics, 2019 – 2020)
         – Thesis: Exploring the spatial accessibility to green space in the Greater London area

Conferences and Presentations

Invited Presentations

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

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

Travel Fund for Early-Career Researchers 2017
Receive €300 to attend a three-day Workshop Leiden University, Netherlands
- Workshop on 'Movement: New Sensors, New Data, New Challenges'

UCL-CSC Joint Research Scholarship 2014 – 2018
Full PhD scholarship, including tuition fees and expenses. UCL, UK

Excellent Prize in 2015 ISPRS-Scientific Initiative Open Data Challenge 2015
Top 10/100 teams due to outstanding algorithm performance Shenzhen, China

Honourable Mention for Best Young Researcher Paper 2015
Receiving $500 in the first International Symposium on Spatiotemporal Computing Fairfax, US

China National Petroleum Corporation Scholarship in Peking University 2010
Receiving ¥5,000 due to outstanding academic performance as top 10/150 students Beijing, China

Merit Student Awards in Peking University 2008
Awarded due to outstanding overall performance as top 20/150 students Beijing, China

Teaching Experience

CASA0007: Quantitative Methods 2019 – Present
Teaching mathematical techniques for describing cities and geographies UCL

CASA0013: Introduction to Programming for Spatial Analysts) 2019 – Present
Python-based, covering pandas/geopandas/matplotlib/sklearn UCL

CASA0006: Data Science for Spatial Systems 2019 – Present
Statistical & machine-learning for spatial analytics UCL

CASA0009: Spatial Data Capture, Storage, & Analysis 2019 – Present
Various topics including MySQL, Javascript, web applications UCL

CASA0011: Agent Based Modelling for Spatial Systems 2021 – Present
Spatially-explicit agent-based models using NetLogo UCL

CASA0011: Agent Based Modelling for Spatial Systems 2021 – Present
Spatially-explicit agent-based models using NetLogo UCL

CEGE076: Spatio-Temporal Data Mining 2015 – 2021
Leading tutorials of spatio-temporal analytics using R & NetLogo UCL

CEGE082: GIS Principles and Technology 2016 – 2017
Leading tutorials of ArcGIS analysis UCL

Leadership Experience

General Secretary of Peking University Alumni Association in UK 2016 – 2018
Coordinating 20-person committee and organising 150-person annual meetings. UK

President of London PhD Network 2016 – Present
Hosting quarterly academic conferences and monthly seminars 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