陈焕发

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教育经历

理学博士 , 地理信息科学	2014 – 2019
伦敦大学学院（UCL）（导师：Tao Cheng教授）	英国
理学硕士, 地图学与地理信息系统	2011 – 2014
北京大学（导师：李琦教授）	中国
理学学士, 化学	2007 – 2011
北京大学	中国

工作经历

副教授, 空间数据科学方向　　　　　　　　　　　　　　2023年10月–
高级空间分析中心, UCL　　　　　　　　　　　　　　　　英国
- 博士生导师；讲授研究生课程
- 副系教务主任(2020年起)

讲师（助理教授）, 空间数据科学方向　　　　　　　　2020年10月–
高级空间分析中心, UCL　　　　　　　　　　　　　　　　英国
- 博士生导师；讲授研究生课程
- 副系教务主任(2020年起)

教员，空间数据科学方向　　　　　　　　　　2019年2月– 2020年10月
高级空间分析中心, UCL　　　　　　　　　　　　　　　　英国

客座教授　　　　　　　　　　　　　　　　　　　　　2019年1月–
建筑与城市学院, University of Westminster　　　　　　　英国
- 讲授GIS和空间分析课程

助教　　　　　　　　　　　　　　　　　2014年10月– 2019年1月
土木环境与测绘系，UCL　　　　　　　　　　　　　　　英国
- 讲授"多智能体仿真"硕士生课程
- 主持R/Python/NetLogo习题课

研究助理　　　　　　　　　　　　　　　2015年10月– 2019年1月
土木环境与测绘系，UCL　　　　　　　　　　　　　　　英国
- 参与"犯罪，警务与市民信心"科研项目，受英国物理与工程科学基金委（EPSRC）资助
- 开发时空犯罪热点预测算法和可视化系统

研究兴趣

空间优化
- 开发新型模型和高性能算法，以解决公共设施选址/路径规划/区划等优化问题
- 应用于城市管理/犯罪预防/警员巡逻等

时空人工智能
- 研发时空大数据驱动的神经网络模型和算法
- 应用于预测犯罪热点/交通流量等

城市居民移动模式

- 融合经济计量学和机器学习模型，预测和理解居民的个体出行交通模式和目的

健康GIS

- 应用GIS方法以理解传染病（例如Covid-19）的时空模式
- 评估防控措施的效果（例如居民疫苗接种率的时空变异特征和影响因素）

研究成果

期刊论文

1. Huanfa Chen, Xiaowei Gao, Huanhuan Li, and Zaili Yang, A framework for the optimal deployment of police drones based on street-level crime risk, Applied Geography **162**, 103178 (2024).
2. Tao Cheng and Huanfa Chen, Special issue on "multi-scale and multimodal human mobility: pre, peri and post COVID-19 pandemic", Geo-spatial Information Science **26**, 599–602 (2023), publisher: Taylor & Francis _eprint: https://doi.org/10.1080/10095020.2023.2293370.
3. Gezhi Xiu and Huanfa Chen, Unravelling the variations of the society of England and Wales through diffusion mapping analysis of census 2011, Journal of The Royal Society Interface **20**, 20230081 (2023), publisher: Royal Society.
4. Huanfa Chen, Yanjia Cao, Lingru Feng, Qunshan Zhao, and José Rafael Verduzco Torres, Understanding the spatial heterogeneity of COVID-19 vaccination uptake in England, BMC Public Health **23**, 895 (2023).
5. Xiaowei Gao, Huanfa Chen, and James Haworth, A spatiotemporal analysis of the impact of lockdown and coronavirus on London's bicycle hire scheme: from response to recovery to a new normal, Geo-spatial Information Science **0**, 1–21 (2023), publisher: Taylor & Francis _eprint: https://doi.org/10.1080/10095020.2023.2233570.
6. Honghan Bei, Huanfa Chen, Lin Li, Xiaowei Gao, Yutong Xia, and Yutong Sun, Joint prediction of travel mode choice and purpose from travel surveys: A multitask deep learning approach, Travel Behaviour and Society **33**, 100625 (2023).
7. Huanfa Chen and Yan Cheng, Travel Mode Choice Prediction Using Imbalanced Machine Learning, IEEE Transactions on Intelligent Transportation Systems , 1–14 (2023).
8. Tongxin Chen, Di Zhu, Tao Cheng, Xiaowei Gao, and Huanfa Chen, Sensing dynamic human activity zones using geo-tagged big data in Greater London, UK during the COVID-19 pandemic, PLOS ONE **18**, e0277913 (2023).
9. Yutong Xia, Huanfa Chen*, and Roger Zimmermann, A Random Effect Bayesian Neural Network (RE-BNN) for travel mode choice analysis across multiple regions, Travel Behaviour and Society **30**, 118–134 (2023).
10. Yutong Xia, Huanfa Chen, Chengchao Zuo, and Nan Zhang, The impact of traffic on equality of urban healthcare service accessibility: A case study in Wuhan, China, Sustainable Cities and Society **86**, 104130 (2022).
11. 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).
12. 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).
13. 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).
14. Huanfa Chen, Tao Cheng, and Sarah Wise, Developing an online cooperative police patrol routing strategy, Computers, Environment and Urban Systems **62**, 19–29 (2017).
15. 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).

16. 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).
17. 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).
18. 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).
19. 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).
20. 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).

书籍章节

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.

正在评审论文

1. Huanfa Chen, Thomas Keel, Mengdie Zhuang, and Nilufer Sari Aslam, Trip purpose prediction using non-sensitive data: a machine learning perspective, Transportation **Under review** (2021).
2. Huanfa Chen, Yanjia Cao, Lingru Feng, and Qunshan Zhao, Measuring and validating spatial accessibility to COVID-19 vaccination sites: a case study in England, Annals of the American Association of Geographers **Under review** (2022).
3. Huanfa Chen, Xiaowei Gao, Kangdi Chen, Honghan Bei, and Roberto Murcio, Tackling the spatial disparity of COVID-19 vaccination services: a spatial optimisation approach, Environment and Planning B: Urban Analytics and City Science **Under review** (2021).
4. Yutong Xia, Huanfa Chen, and Roger Zimmermann, A Random Effect Bayesian Neural Network (RE-BNN) for travel mode choice analysis across multiple regions, Travel Behaviour and Society **30**, 118–134 (2023).
5. Honghan Bei, Huanfa Chen, Lin Li, Xiaowei Gao, Yutong Xia, and Yutong Sun, Joint prediction of travel mode choice and purpose from travel surveys: a multitask deep learning approach, Geo-spatial Information Science **Under review** (2022).
6. Hongbiao Zhao, Xiaowei Gao, and Huanfa Chen, Nonlinear control of decarbonization path following for underactuated ships, Applied Energy **Under review** (2022).

会议论文

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).

项目报告

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).

软件项目

其他研究成果

指导学生

1. 伦敦大学学院, 英国, 2019 –

    (a) 博士生(作为第二导师)

        i. Xiaowei Gao (PhD Geographical Information Science, 2020 –)
            – Research area: Spatio-temporal analytics of cycling mobility
        ii. Meihui Wang (PhD Geographical Information Science, 2020 –)
            – Research area: Urban analytics based on street-view imagery

    (b) 硕士生(共指导30名硕士生，以下是部分学生的论文题目)

        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 cast 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

会议报告

受邀报告

Geospatial machine learning: motivations and implications — 2020年5月
天津大学建筑学院

Machine learning for urban analytics and transport studies — 2021年3月
中国测绘科学研究院

荣誉和奖励

UCL Q-Step学生实习项目 — 2021
£3,000 资助，指导本科生科研项目 — UCL, 英国
- 科研项目：评估全球多国家的Covid-19疫苗服务的可达性

2019 AAG Applied Geography Specialty Group Project Development Award — 2019
$500 资助，支持"预测城市地区共享单车需求"的研究项目 — 美国

2019 AAG Applied Geography Specialty Group Travel Award — 2019
$250 参会补贴 — US

Roger Tomlinson论文奖 — 2018
由ESRI公司资助，授予UCL指导的地理信息科学方向最佳博士论文 — UCL, 英国

EPSRC互联社会先行者比赛决赛选手 — 2018
由英国物理与工程科学基金会发起的比赛，全英国共500名多领域的博士生参赛，决赛名单共16人 — 英国

上海开放数据应用大赛"明日之星"奖励 — 2017
领队，负责项目管理和算法开发 — 上海，中国
- 项目内容：共享单车的站点选址和运营优化

年轻研究者的旅行补贴	2017
获得€300 资助，以参加研讨会	Leiden University, 荷兰
• 研讨会主题："移动模式：新传感器，新数据，新挑战"	
UCL-CSC 联合博士奖学金	2014 – 2018
博士全额奖学金，资助期限四年	UCL, 英国
2015年ISPRS开发数据全球挑战赛优秀奖	2015
作为队长，带队在初赛排名前十（共100个队伍参赛）	深圳大学, 中国
最佳青年学者论文提名奖	2015
在首届时空计算国际会议获得$500 奖励	乔治梅森大学, 美国
北京大学-中石油奖学金	2010
学业成绩在全年级排名前10/150；奖金¥5,000	北京大学, 中国
北京大学三好学生	2008
学业成绩在全年级排名前20/150	北京大学, China

教学经历

CASA0007: 定量方法	2019 –
教授城市研究和空间分析的数学方法基础	UCL
CASA0013: 空间数据科学基础	2019 –
基于Python的空间数据科学, 涵盖pandas/geopandas/matplotlib/sklearn	UCL
CASA0006: 空间数据科学	2019 –
基于统计学习和机器学习的空间分析方法	UCL
CASA0009: 空间数据获取，存储与分析	2019 –
涵盖MySQL数据库, Javascript, WebGIS网站建设	UCL
CASA0011: 空间多智能体模型	2021 –
基于NetLogo编程的空间显式多智能体模型	UCL
CEGE0076: 时空数据挖掘	2015 – 2021
基于R语言，介绍时空数据挖掘常用模型和方法	UCL
CEGE0082: GIS思想与方法	2016 – 2017
讲授基于ArcGIS的GIS习题课	UCL

协会活动

协会会员

会员, 美国地理学家协会	2015 –

协会任职

理事会成员,国际华人地理信息科学协会	2021 –
秘书长，北京大学全英校友会	2016 – 2018
主持20人的理事会，组织150名参会人员的年会	英国
主席, 伦敦博士联盟	2016 –
组织多学科领域的学术研讨会；协会共有800名成员	英国

期刊编辑

编委会成员, **Humanities and Social Sciences Communications**	2022 –
客座编辑，负责**Covid-19 Impact on Human Mobility**特刊	2021 – 2022
Geo-spatial Information Science	

评审经历

期刊审稿

International Journal of Geographic Information Science 2015 –

Computers, Environments, and Urban Systems 2018 –

Transportation Research Part C: Emerging Technologies 2019 –

Journal of Homeland Security and Emergency Management 2022 –

技能

语言: 普通话, 英语, 粤语，潮汕话
编程: Python, R, Java, C++, Linux Bash
软件系统: Esri ArcGIS, Microsoft Office Suite, LaTex, Markdown
业余兴趣: 羽毛球, 旅行, 阅读, 博客写作