Research Associate
Institute of Manufacturing
Department of Engineering
University of Cambridge
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Dr. Ge Zheng

Current Employment

2022–Now **Research Associate, Institute of Manufacturing, Department of Engineering, University of Cambridge**, CB3 0FS, UK.
Group: Supply Chain AI lab
Website: https://www.ifm.eng.cam.ac.uk/research/supply-chain-ai-lab/
Project: Collective Risk Learning for Supply Chain Disruption Preparedness
Project Description: This project is motivated by reducing risks of supply chains (i.e., delivery delays, payment delays and low quality of products) and improving resilience of supply chains. It aims to predict risks of supply chains using collective learning.
Interested areas:
- Supply Chain Risk Analysis
- Intelligent Transport Systems
- Human Activity Recognition
- Data Science
- Machine Learning, Deep Learning, Collective learning

Previous Education

2018–2022 **Full-time PhD Student, Department of Computing & Informatics, Faculty of Science & Technology, Bournemouth University**, BH12 5BB, UK.
Full PhD Scholarship
Project Title: Deep Learning Models for Traffic Prediction in Urban Transport Networks.
Project Description: This project is motivated by reducing traffic congestion and its related influences on urban traffic (i.e., frequent traffic incidents and long travel time.). It aims to predict future traffic states in urban transport networks using deep learning technology and share the predicted traffic states with road users and intelligent transportation system as well for traffic congestion reduction.

2017–2018 **M.Sc. in Electronic Engineering, School of Computer Science & Electronic Engineering, University of Essex**, CO4 3SQ, UK.
Academic Excellence International Masters Scholarship
Project: A Smart Wristband Development for Fall Detection.
Project Description: This project is motivated by helping old people obtain timely help when they fall due to the mobility problem. It aims to use machine learning technology to detect falls from daily activities.
M.Sc. degree was awarded with **Distinction** in October 2018.

2011–2015 **BEng in Mechatronics, Henan University of Science & Technology**, China.
BEng degree was awarded in July 2015.
GPA : **84.51/100**

Honors & Awards

2021 Best Conference Paper Award, *in the* 26^{th} *International Conference on Automation and Computing (ICAC'21).*

2018-2021 Full PhD Studentship from Bournemouth University in UK.

2017 Academic Excellence International Masters Scholarship from the University of Essex in UK.

2014-2015 Second Class Scholarship Prize from Henan University of Science & Technology in China.

2014 National 3-D CAD Certification in China.

2013-2014 First Class Scholarship Prize from Henan University of Science & Technology in China.

2013-2014 Prize of Outstanding Student from Henan University of Science & Technology in China.

2012-2013 First Class Scholarship Prize from Henan University of Science & Technology in China.

2012-2013 Prize of Outstanding Student from Henan University of Science & Technology in China.

2012 Third Class Prize in the Speech Contest from Henan University of Science & Technology in China.

2011-2012 National Scholarship Inspirational from Henan University of Science & Technology in China.

2011-2012 Prize of Outstanding Student from Henan University of Science & Technology in China.

Professional Activities

09/2021 IEEE International Conference on Automation and Computing, *in Portsmouth, UK.*
Given an oral presentation.

12/2019 IEEE Global Communications Conference, *in Wailoloa, Hawaii, USA.*
Given a presentation.

09/2019 IEEE International Conference on Automation and Computing, *in Lancaster University, UK.*
Given an oral presentation.

09/2019 Secondment IDEAL CITIES project, *in Cablenet Communication Systems Lt.d. in Cyprus.*
Conducted a secondment and also given an oral presentation.

05/2019 SciTech PGR Conference 2019, *at Bournemouth University, U.K.*
Given an oral presentation.

Academic Activities

11-2022 Attending the event of Digital Manufacturing Week 2022 in Liverpool.

10-2022 Giving a talk about Machine Learning in Engineering in Imperial College London, *Given an oral presentation..*

2021–now Being a reviewer for *IEEE Sensors Journal* in 2021.

2021–now Being a reviewer for *IEEE Access* in 2021.

2021–now Being a reviewer for *IEEE* 26^{th} *International Conference on Automation and Computing (ICAC)* in 2021.

2020-now Being a reviewer for *IET Intelligent Transport Systems* in 2020.

2020-now Being a reviewer for *IEEE Global Communication Conference* in 2020.

2020-now Being a reviewer for *International Journal of Automation and Computing (IJAC)* in 2020.

Publications

Journal Articles

2023 **Ge Zheng**, Wei Koong Chai, Jiankang Zhang, and Vasilis Katos, VDGCNTGA: A Novel Network-wide Virtual Dynamic Graph Convolution Neural Network and Transformer-based Traffic Prediction Model, *Knowledge-based Systems*, Accepted on the 26th of May 2023.

2023 Yan Wang, Xin Wang, Hongmei Yang, Yingrui Geng, Hongnian Yu, **Ge Zheng**, Liang Liao, MhaGNN: A novel framework for wearable sensor-based human activity recognition combining multi-head attention and graph neural networks, *IEEE Transactions on Instrumentation and Measurement*, 2023.

2023 Yan Wang, Xin Wang, Damla Arifoglu, Chenggang Lu, Abdelhamid Bouchachia, Yingrui Geng, **Ge Zheng**, A Survey on Ambient Sensor-Based Abnormal Behaviour Detection for Elderly People in Healthcare, *Electronics*, 2023.

2023 **Ge Zheng**, Lingxuan Kong, Alexandra Brintrup, Federated Machine Learning for Privacy Preserving, Collective Supply Chain Risk Prediction, In *International Journal of Production Research*, Pages 1–18, 2023.

2023 **Ge Zheng**, Wei Koong Chai, and Vasilis Katos, Hybrid deep learning models for traffic prediction in large-scale road networks, In *Information Fusion*, Volume 92, Pages 93–114, 2023.

2022 **Ge Zheng**, Wei Koong Chai, and Vasilis Katos, A Dynamic Spatial-temporal Deep Learning Framework for Traffic Speed Prediction on Large-scale Road Networks., In *Expert Systems with Applications*, volume 195, page 116568, Elsevier, 2022.

2021 **Ge Zheng**, A Novel Attention-based Convolution Neural Network for Human Activity Recognition, In *IEEE Sensors Journal*, Volume 21, Number 23, Pages 27015-27025, 2021..

2021 **Ge Zheng**, Zhijun Peng, Life Cycle Assessment (LCA) of BEV's environmental benefits for meeting the challenge of ICExit (Internal Combustion Engine Exit), In *Energy Reports*, volume 7, pages 1203-1216, Elsevier, 2021.

2021 **Ge Zheng**, Wei Koong Chai, Vasilis Katos, and Michael Walton, A Joint Temporal-Spatial Ensemble Model for Short-Term Traffic Prediction,, *Neurocomputing,* volume 457, pages 26–39, Elsevier, 2021.

Conference Papers

2021 **Ge Zheng**, Wei Koong Chai, and Vasilis Katos, The Sequence-to-Sequence architecture with An Embedded Module for Long-Term Traffic Speed Forecasting with Missing Data, In *IEEE 26th International Conference on Automation and Computing (ICAC)*, 2021.

2019 **Ge Zheng**, Hongtao Zhang, Keming Zhou, and Huosheng Hu, Using machine learning techniques to optimize fall detection algorithms in smart wristband, In *IEEE 25th International Conference on Automation and Computing (ICAC)*, pages 1–6, 2019.

2019 **Ge Zheng**, Wei Koong Chai, and Vasilis Katos, An ensemble model for short-term traffic prediction in smart city transportation system, In *2019 IEEE Global Communications Conference (GLOBECOM)*, pages 1–6. IEEE, 2019.

2019 Michael Walton, John Woods, and **Ge Zheng**, Efficient Charging for Batteryless Solutions in Energy Harvestin, In *2019 11th Computer Science and Electronic Engineering (CEEC)*, pages 7–11. IEEE, 2019.

Best Conference Paper Award

2021 **Ge Zheng**, Wei Koong Chai, and Vasilis Katos, The Sequence-to-Sequence architecture with An Embedded Module for Long-Term Traffic Speed Forecasting with Missing Data, In *IEEE 26th International Conference on Automation and Computing (ICAC)*, Accepted in 6th of June, 2021..

Previous Employment

02/2023 – now Supervisor for MPhil students, Institute for Manufacturing, Department of Engineering, University of Cambridge.
Supervising the final project of MPhil students

01/2022 – 07/2022 Visit Lecturer, Artificial Intelligence, Bournemouth University.
Delivering lectures to students

11/2021 – 01/2022 Lab assistant, Computer Fundamentals, Bournemouth University.
Supporting students for their experiment works in labs

01/2021 – 05/2021 Lab assistant, CIS038-3, University of Bedfordshire.
Supporting students for their experiment works in labs

02/2021 – 02/2021 Visit Lecturer, CIS135-6, University of Bedfordshire.
Giving lectures for undergraduates.

11/2020 – 01/2020 Visit Lecturer and also Lab assistant, CIS108-2, University of Bedfordshire.
Giving lectures and also supporting students for their experiment works in labs

10/2019 – 01/2020 Lab assistant, Digital Forensics Fundamentals Unit, Bournemouth University.
Supporting students for their experiment works in labs

03/2017 – 09/2017 Application Advisor, TIANDAO EDU Ltd, Beijing, *China*.
Helping students apply offers of universities in USA.

01/2016 – 05/2016 Tutor, Web International English Ltd, Beijing, *China*.
Teaching English and managing course schedules.

Computer skills

Programming Languages: Python (PyTorch, TensorFlow and Keras); MatLab; C; C++.
My favourite programming language is Python. All projects I have done are related to data collection, analysis, processing, visualisation, machine and/or deep learning model building based on Python programming language. Considering the flexibility of developing novel deep learning algorithms, the framework I used for Python is PyTorch and the editor for coding is PyCharm. Considering the computer system of Linux performs better then Windows for big data analysis, all experiments for my projects are conducted on the Linux System.

Software: PyCharm; Anaconda; MATLAB; AutoCAD; Altium Designer; Proteus; Microsoft Office; Latex (All my publications were written on Latex).

Operating Systems : Windows XP, Linux, Mac OS X.