Dr. Zhao HUANG

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SUMMARY

I am **Lecturer** in Computer and Information Science at **Northumbria University, Newcastle**, affiliated with the Autonomous Systems Research Group.

Prior to this, I was a PhD student at **Queen Mary University of London (QMUL)**, affiliated with the Centre for Intelligent Sensing, School of Electronic Engineering and Computer Science (EECS). I previously worked as a Teaching Fellow at QMUL (Part-time, during my PhD) where I also received my **PhD (Jan. 2024)**.

*My research experience has been interdisciplinary, covering both **Machine Learning, Artificial Intelligence, Intelligent Systems, Spatial Data Mining***
My major research interests (with measurable track record) include:
(i) Data-driven Localization, (ii) Location-based Service in Smart City, (ii) Bio-inspired Artificial Intelligence (Spiking Neural Network), (iii) Robotics (Localization and navigation), (v) Sensors Technology

EDUCATION

Doctor of Philosophy (Ph.D.), Computer Science, Queen Mary University of London, UK   Sept. 2020-Jan. 2024. (Supervised by Dr. Stefan Poslad & Dr. Jesus Requena)

Master of Science (Distinction), Information and Communication Engineering, Shenzhen University, China   Sept. 2017-Jun. 2020. (Supervised by Prof. Qingquan Li)

Bachelor of Engineering (Hons.), Electronics and Information Engineering, Gannan Normal University, China   Sept. 2013-Jun. 2017

EMPLOYMENT AND TEACHING EXPERIENCE

Lecturer, Computer and Information Science, Northumbria University   Jan. 2024 – present
I have recently joined Northumbria University (Newcastle) to take up the position of Lecturer. Newcastle, United Kingdom

- **Teaching and Course Leadership**
  * **2023/2024 Academic Year**
    · **KF6007, Artificial Intelligence and Robotics**: 36 master students (Level 7).
    · **KV4012, Programming**: 99 undergraduate students (Level 4).
  * **2024/2025 Academic Year**
    · **KV4004, Artificial Intelligence (AI) Fundamentals** undergraduate students (Level 4).
    · **KV6022, Robotics and Automation**: master students (Level 6).
    · **KV5033, Algorithms and Data Structures**: undergraduate students (Level 5).
- **Supervision**
  * I supervised **4 undergraduate student programs, 6 master student programs**, as an external Supervisor, I co-supervised **1 PhD student** with Dr. Chaoyun Song (KCL).

Teaching Fellow, EECS, Queen Mary University of London   Sept. 2023 – August. 2024
I have joined Queen Mary University of London to take up the position of Teaching Fellow.   London, United Kingdom

- **Supervision**
  * **EECS MSc Project - ECS750P/ECS753P/ECS754P/IOT7016W - 2023/24**: I supervised **12 master students** for their final projects, including choosing topics, designing AI algorithms, carrying out experiments and writing reports.
  * **ECS635U/ ECS635W - Project - 2023/24**: I also supervised **8 undergraduate students** for their final projects.

* **Examination**: I was the First/Second examiner for **more 50 undergraduate students and master students.**

Teaching Assistant, EECS, Queen Mary University of London   Sept. 2023 – Dec. 2023
I am a teaching assistant at Queen Mary University of London.   *London, United Kingdom*
- Teaching
    * **ECS642U/ECS714P - Embedded Systems - 2023/24**: I delivered **Embedded Systems module** with Dr. William Marsh for 42 undergraduate students, including Hardware equipment application (such as Arduino, etc.) and programming, etc.

Visiting Researcher, Agency for Science, Technology and Research   Jan. 2023 – Sept. 2023
*I am a visiting researcher of the Agency for Science, Technology and Research (A*star).*   *Singapore*
- I visited Institute for Infocomm Research (I2R) Lab, Agency for Science, Technology and Research (A*star), supervised by Dr. Zhenghua Chen and Zhengguo Li.

Visiting Researcher, Wuhan University, China   Sept. 2022 – Jan. 2023
I am a visiting researcher at Wuhan University.   *Wuhan, China*
- I visited the State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing, supervised by Prof. Bisheng Yang.

Teaching Assistant, EECS, Queen Mary University of London   Sept. 2021 – Sept. 2022
I am a teaching assistant at Queen Mary University of London.   *London, United Kingdom*
- Teaching
    * **ECS782P - Introduction to IOT - 2021/22**: I delivered **Internet of Things (IoT) module** with Dr. Stefan Poslad for 33 master students, including Hardware equipment application (such as Arduino, etc.) and Deep Learning algorithms designing, etc.
- Supervision
    * I co-supervised **6 master students** (BUPT-QM Joint Program) with Dr. Stefan Poslad, I help them with proposing topics, designing AI algorithms, carrying out experiments and writing reports.

PhD Researcher, EECS, QMUL (supervised by Dr. Stefan Poslad)   Sept. 2020 – Jan. 2024
I am a PhD student at Queen Mary University of London.   *London, United Kingdom*

I am a PhD student at EECS, QMUL, supervised by **Dr. Stefan Poslad**. My research area focuses on AI, Intelligent Perception (especially for position perception), Scene Recognition, IoT, and Wireless sensing.

GRANT AND FUNDING

- **Investigator(PI)**: *International Exchanges 2024 Cost Share (NSFC), UK, £ 12K/two year* (Waiting for decision, 2024).

- **Co-Investigator(Co-PI)**: *Water pollution detection Project* (in progressing, 2024).

- **Principal Investigator(PI)**: *Ph.D. Joint Program with Agency for Science, Technology and Research (A*STAR), Singapore, £ 18K per year* (Jan. 2024-Present, Long-term).

- **Principal Investigator(PI)**: *Ph.D. Joint Program with Shenzhen University, China, £ 19K per year* (Jan. 2024-Present, Long-term).

- **Participators**: *Shenzhen Science and Technology Program (JCYJ20220818095816035),CNY 3 million* (2022-2026).

- **Participators**: *Shenzhen Scientific Research and Development Funding (JCYJ20180818101704025), CNY 1.6 million* (2018-2020).

- **Participators**: *Nature Science Foundation of Shenzhen University (JCYJ201870412142144518), CNY 3.2 million* (2018-2021).

HONOURS, AWARDS AND PERSONAL DISTINCTIONS

- **Excellent Master's Graduate of Shenzhen University (Distinction)**, Shenzhen University, June 2020. **(Top 5%)**
- **The First Class Scholarship of Shenzhen University**, Shenzhen University, September 2019. **CNY 10K**. **(Top 3%)**
- **Excellent Graduate of Gannan Normal University**, Gannan Normal University, September 2017. **(Top 5%)**
- **The Third Prize in The China National Mathematics Competition for College Students**, Ministry of Education of the People's Republic of China, October 2016. **(Top 8%)**

RESEARCH PROJECTS

WiFi Localization with Deep Spiking Neural Network   2023-2024

- *This is a project for human localization using IMU sensors, it collaborates with Chongqing University (with Prof. Fuqiang Gu), China. Utilized Spiking Neural Network to simulate the transmission mechanism of information in the brain, then, fusing it with deep neural network to reduce significantly energy consumption and verify the effectiveness of this network in mobile computation.*

Efficient Neural Inertial Localization Network   2022-2023

- *This is a project from Chongqing University (with Prof. Fuqiang Gu). Proposed an Efficient Neural Inertial Localization for pedestrian position estimation based on the inertial measurement unit (IMU), which can enjoy the simplicity and speed of linear models while also being able to reduce localization errors and avoid privacy-invasion issues.*

Image Retrieval by Murals on the Wall   2020-2022

- *This is a project from Wuhan University (with Prof. Bingxuan Guo). Designed a fast image-based indoor localization method based on an anchor control network (FILNet) to improve localization accuracy and shorten the time of feature matching, the anchors include murals, Brick, etc.*

Scene Recognition Based on Human activity classification   2020-2022

- *This is a project from Wuhan University (with Prof. Bingsheng Yang). Developed a novel deep Bayesian active learning waypoint estimator for indoor walkers based on human activity recognition (HAR). This estimates six indoor waypoints through walkers' daily activities due to the strong correlation between human activities and waypoints.*

Developing an International Conference Website.   2017-2018

- *This is a project from Shenzhen University (with Prof. Jizhe Xia). Designed and developed the 11th International Conference on Mobile Mapping Technology (MMT 2019, Based on HTML5) website and WeChat platform.*

EDITORIAL AND REVIEWER ROLES

Reviewer for

- IEEE Wireless Communications Magazine
- IEEE Internet of Things
- IEEE Transactions on Instrumentation and Measurement
- IEEE Transactions on Vehicular Technology
- IEEE Sensors Journal
- Measurement

ACADEMIC ACTIVITIES

International Academic Collaborations

- **Qingquan Li**, School of Architecture and Urban Planning Shenzhen University)
Topic: Multi-sensor integration and Precise engineering surveying
- **Bisheng Yang**, Wuhan University, China
Topic: Object detection and Localization based cloud point and image data
- **Jianping Li**, Nanyang Technological University, Singapore
Topic: Object detection and Localization based cloud point and image data
- **Fuqiang Gu**, Computer Science Department, Chongqing University, China
Topic: Human Localization based on IMU and WiFi
- **Zhenghua Chen** and **Zhengguo Li (IEEE Fellow)**, Agency for Science, Technology and Research (A*STAR), Singapore
Topic (Zhenghua): Human activity recognition based IMU and Radar
Topic (Zhengguo): Pose Estimation based on Image data; Depth Estimation based on Single Im

Industrial Collaborations
- **Jindong Gu**, Object detection and tracking, Google Research & DeepMind
- **Bang Wu**, Path Planning for Autonomous Vehicles
- **Yibao Sun**, Objective Detection based on Computer Vision. Pengcheng Laboratory

TECHNICAL COMPETENCIES

- **Machine Learning**: Deep Learning (Attention/CNN/RNN/Transformer/SNN, etc.), Decision Tree (DT), Naive Bayes (NB), Random Forest, Support Vector Machine (SVM), K-Nearest Neighbors (KNN)
- **Positioning & Mapping**: Wireless Localization (e.g., WiFi, Bluetooth), Pedestrian Dead Reckoning (PDR), Visual Localization, Map Matching, Kalman Filtering, Hidden Markov Model, Particle Filtering, Simultaneous Localization and Mapping (SLAM)
- **Programming Languages**: C, Python, JAVA, Matlab, C++, HTML5(including CSS)

PUBLICATIONS

From 2019 to the present, I have **25** papers published and **13** papers are still under review or revision. (**Google Scholar**)

1. **Submitted Papers (2024):**

9. Xingru Huang, Yihao Guo, **Zhao Huang***, etc. Volumetric Axial Disentanglement Enabling Advancing in Medical Image Segmentation. ***The 34th International Joint Conference on Artificial Intelligence (IJCAI-25)***. (Co-Author, Core A conference, submitted)

8. Jin Liu, Yihao Guo, **Zhao Huang**, etc. CredSplatting: Perception Credence Oriented Feed-forward 3D Gaussian Splatting from Scalable Views.***The 34th International Joint Conference on Artificial Intelligence (IJCAI-25)***. (Co-Author, Core A conference, submitted)

7. Qilei Li, **Zhao Huang***. Lightweight Road Segmentation via Graph-Enabled Feature Consistency for Consumer Internet-of-Everything. ***IEEE Transactions on Consumer Electronics***. (Corresponding Author)

6. Gao, Mingliang, Qilei Li, **Zhao Huang**. Leveraging Multi-Scale Attention for GRU-Based Infrared and Visible Image Fusion. ***Signal Processing***, 2025. (Co-author, Under Review)

5. Luo Fei; Li Anna; Jiang Bin; Ma Jieming; **Zhao Huang***. RadarAttn: efficient radar-based human activity recognition by integrating visual attention and self-attention. ***IEEE Transactions on Networking***, 2025. (Corresponding Author, Under Review)

4. **Zhao Huang**, Stefan Poslad, Zhenghua Chen, Jizhe Xia and Fuqiang Gu. ENILoc: Efficient Neural Inertial Localization. ***Measurement***, 2024. (Under Review)

3. **Zhao Huang**, Stefan Poslad, Zhenghua Chen, Jizhe Xia and Fuqiang Gu. SpikWL: WiFi Localization with Deep Spiking Neural Network. ***Expert Systems with Applications***, 2024. (Under Review)

2. Honglei Li, **Zhao Huang***, Meng Xu. Wavelet-Transformation based Stock Prices Prediction. ***Information Science***, 2024. (Corresponding author, Under Review)

1. Yaqi Wang, Yifan Zhang, Xiaodiao Chen, Qianni Zhang **Zhao Huang**, etc. Progressive Pseudo-Label Refinement Learning for Multi-Stage Semi-Supervised 2D Panoramic X-ray and 3D CBCT Segmentation: A Retrospective Study from the STS MICCAI 2023 Challenge. ***Pattern Recognition***, 2024. (Under Review)

2. **Part of Published (or accepted) Papers (2019-Present):**

16. Huan Pan, Ruiya Ji, Wenming Cao, **Zhao Huang**, Jianqi Zhong. "Optimizing Human Motion Prediction through Decoupled Motion Spatio-Temporal Trends", ***Multimedia Systems***, 2025. (**Co-author**, Accepted, Q1)

15. Minglei Guan, Rui Suna, **Zhao Huang***, Xuhong Suo, Dejin Zhang, Li Jiang. Tube Deformation Measurement with Camera and Laser. ***Measurement***, 2025. (Accepted, Q1, **Corresponding author**)

14. Mingang Yuan; Limei Chen; Gaofei Huang; Wanqing Tu; **Zhao Huang**; Maitha Shaali. High-Throughput Wireless Uplink Transmissions Using Self-Powered Hybrid RISs. ***2025 IEEE Wireless Communications and Networking Conference (WCNC)***, 2025. (**Co-author**, Accepted)

13. **Zhao Huang**, Yifeng Zeng, Stefan Poslad, and Fuqiang Gu*. SpikePR: Position Regression with Deep Spiking Neural Network. ***IEEE Sensors Journal***, 2024. (**First author**, Accepted, Q1)

12. Ruiya Ji, Jianqi Zhong*, **Zhao Huang**, et. Cross-space Behavior-aware Feature Learning Networks for 3D Human Motion Prediction ***Journal of King Saud University - Computer and Information Sciences***, 2024. (**Co-author**, Accepted, Q1)

11. MUhammad Usman, Wenming Cao*, **Zhao Huang**, Jianqi Zhong, Ruiya Ji. OTM-HC: Enhanced Skeleton-based Action Representation via One-to-Many. ***AI***, 2024. (**Co-author**, Accepted, Q2)

10. **Zhao Huang**, M Valkama, J Zhang, M Xu, C Yin, M Guan. WiLoc: WiFi localization with Siamese Neural Encoders. ***Indoor Positioning and Indoor Navigation (IPIN Conference)***, 2024. (**First author**, Accepted)

9. Meng Xu, Youchen Wang, Jun Zhang, Bin Xu, Jian Ren, **Zhao Huang***, Stefan Poslad, Pengfei Xu. A critical analysis of Image-based Camera Pose Estimation Techniques. ***Neurocomputing***, 2024. ((**Corresponding Author, Q1**).

8. Sikang Liu, **Zhao Huang**, etc. FILNet: Fast Image-based Indoor Localization Using an Anchor Control Network. ***Sensors***, 2023. ((**Co-First author**), Q2)

7. Anna Li, Eliane Bodanese, Stefan Poslad, **Zhao Huang**, Tianwei Hou, Kaishun Wu, Fei Luo. An Integrated Sensing and Communication System for Fall Detection and Recognition Using Ultra-Wideband Signals. ***IEEE Internet of Things Journal***, 2023. (**Co-author**, Q1)

6. **Zhao Huang**, Stefan Poslad, Qingquan Li, Bisheng Yang, Jizhe Xia, Bang Wu, Zhaoliang Luan, Yonglei Fan. DeepWE: A Deep Bayesian Active Learning Waypoint Estimator for Indoor walkers. ***IEEE Internet of Things Journal***, 2023. (**First author**, Q1)

5. **Zhao Huang**, Stefan Poslad, Qingquan Li, Jianping Li, Chi Chen. Landmark Detection Based on Human Activity Recognition for Automatic Floor Plan Construction. ***18th EAI International Conference on Collaborative Computing: Networking, Applications and Worksharing***, 2022. (**First author**)

4. **Zhao Huang**, Jizhe Xia, Fan Li, Zhen Li, Qingquan Li. A Peak Traffic Congestion Prediction Method Based on Bus Driving Time, ***Entropy***, 2019. (**First author**, Q2)

3. **Zhao Huang**, Qingquan Li, Fan Li, Jizhe Xia. Anovel bus-dispatching model based on passenger flow and arrival time prediction. ***IEEE ACCESS***, 2019. (**First author**, Q2)

2. **Zhao Huang**, Qingquan Li, Jizhe Xia, Fan Li. Passenger Satisfaction Prediction Method Based on Driving Time. ***the Computing, Communications and IoT Applications Conference (ComComAp2019)***, 2019. (**First author**)

1. **Zhao Huang**, Weixing Xue, Baoding Zhou. A weighted K neighborhood indoor localization method based on CSI. ***Journal of Geomatics***, 2019. (**First author**)