Zhihua Liu（刘志华）

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Education:

University of Leicester, Leicester, UK *09/2018 – 09/2023*

- MPhil, DPhil in Computer Science, Biomedical Image Processing Lab (BIPL), University of Leicester.
- Supervisor: Prof. Huiyu Zhou

University of Edinburgh, Edinburgh, Scotland, UK *09/2015 – 11/2016*

- MSc in Artificial Intelligence, School of Informatics
- Supervisor: Dr. Myungjin Lee

University of Science and Technology Beijing, Beijing, China *09/2011 – 06/2015*

- BEng of Internet of Things, School of Computer Science and Communication Engineering
- Supervisor: Prof. Stephen McKenna, Prof. JianGuo Zhang, Dr. Sebastian Stein, University of Dundee, Scotland, UK
- Major GPA: 3.56/4.0, Overall GPA: 3.21/4.0 (Top 10%)

Working Experience:

Algorithm Engineer, JD.COM, Beijing, China *09/2016 – 09/2018*

- **Obstacle Detection in Point Cloud** Research works on car, pedestrian and cyclist detection in 3D Point Clouds generated from LiDAR. Proposed a modified Single Shot MultiBox Detector (SSD) and an adaptive Fully Convolutional Network (FCN) using 3D voxels. Deployed trained models within autonomous driving cars and high-definition map production pipeline under ROS environment.
- **Point Cloud Data Storage System** Core developer on Point Clouds data storage system based on HBase. Contribution includes serialization and deserialization module, Kerberos authentication development, Elastic retrieval deployment, message-oriented middleware (MOM) development using RabbitMQ.

Research Assistant, University of Leicester & Astrosat *04/2020 - 11/2020*

Automated building construction detection and grading in satellite images.

Research Assistant, University of Leicester *12/2020 - 06/2021*

Deep learning based anomaly detection in DOMINOES project.

Teaching Experience:

Teaching Assistant, University of Leicester *2019 - 2020*

CO3091 Computational Intelligence and Software Engineering, CO7506 System-Re-engineering,

CO7507 Generative Development, FS0023 STEM Foundation Year Lab-Physics

Teaching Assistant, University of Leicester *2020 - 2021*

CO1109 Business and Financial Computing, CO7218 Financial Services Information Systems,

CO3099 Foundations of Cybersecurity

Teaching Assistant, University of Leicester *2021 - 2022*

CO1104 Computer Architecture, CO3102 Mobile and Web Applications, CO4105 Advanced C++ Programming,

CO3002 Analysis and Design of Algorithms, CO3099 Foundations of Cybersecurity

Research Projects:

Superspreader Detection in Software Defined Network (SDN) (MSc Dissertation) *01/2016 - 08/2016*

- Software Defined Network environment set up using Mininet and OpenFlow
- Proposed a Bayesian model to detect a host machine which scans various ports of various servers or clients as we call it a superspreader.
- Proposed an authentication method to shut down the connection between targets and potential superspreader based on

OpenFlow.

Multi-Classes Training and Testing in Food Preparation Recognition Tasks (BEng Dissertation) *10/2014 - 05/2015*

- Data collection and processing from environments for the food preparation in kitchen, generated from sensors like Kinect camera, and accelerators
- Using structured svm as the classier to do time serious vision behavior recognition training and testing. Complete the initial and transaction matrix of hidden markov model.

Publications:

- "Deep Learning Based Brain Tumor Segmentation: A Survey" **Zhihua Liu**, Long Chen, Lei Tong, Feixiang Zhou, Zheheng Jiang, Qianni Zhang, Caifeng Shan, Xiangrong Zhang, Ling Li, Huiyu Zhou (arXiv, 2022)
- "Detecting and Tracking of Multiple Mice Using Part Proposal Networks" Zheheng Jiang, **Zhihua Liu**, Long Chen, Lei Tong, Xiangrong Zhang, Xiangyuan Lan, Danny Crookes, Ming-Hsuan Yang, Huiyu Zhou (IEEE Trans. on Neural Networks and Learning Systems., 2022)
- "Cost-sensitive Boosting Pruning Trees for depression detection on Twitter" Lei Tong, **Zhihua Liu**, Zheheng Jiang, Feixiang Zhou, Long Chen, Jialin Lyu, Xiangrong Zhang, Qianni Zhang, Abdul Sadka, Yinhai Wang, Ling Li, Huiyu Zhou (IEEE Trans. on Affective Computing. 2022)
- "Structured Context Enhancement Network for Mouse Pose Estimation" Feixiang Zhou, Zheheng Jiang, **Zhihua Liu**, Fang Chen, Long Chen, Lei Tong, Zhile Yang, Haikuan Wang, Minrui Fei, Ling Li, Huiyu Zhou (IEEE Trans. on Circuits and Systems for Video Technology, 2021)
- "CANet: Context Aware Network for Brain Glioma Segmentation" **Zhihua Liu**, Lei Tong, Long Chen, Feixiang Zhou, Zheheng Jiang, Qianni Zhang, Yinhai Wang, Caifeng Shan, Ling Li, Huiyu Zhou (IEEE Trans. on Medical Imaging, 2021)
- "Perceptual underwater image enhancement with deep learning and physical priors" Long Chen, Zheheng Jiang, Lei Tong, **Zhihua Liu**, Aite Zhao, Qianni Zhang, Junyu Dong, Huiyu Zhou (IEEE Trans. on Circuits and Systems for Video Technology, 2020)
- "Underwater object detection using Invert Multi-Class Adaboost with deep learning" Long Chen, **Zhihua Liu**, Lei Tong, Zheheng Jiang, Shengke Wang, Junyu Dong, Huiyu Zhou (IJCNN, 2020)

Professional Service:

- **Reviewer of:**
  Conference: ICRA (2019, 2020) **BMVC** (2019, 2020, 2021) **CVPR** (2020, 2021, 2022) **ACCV** (2020) **WACV** (2021, 2022) **ICCV** (2021)
  Journal: IEEE Transaction on Human-Machine System, IEEE Journal of Biomedical and Health Informatics, Neurocomputing
- **Organizer of:**
  Sino-UK to Promote the Development and Application of Artificial Intelligence (Leicester, 12th Jun 2019,)
  Leicester Winter Data Science Seminar (Leicester, 11th Dec 2019)

Skills:

Language

- Python, C/C++, MATLAB, JAVA

Frameworks

- PyTorch, Tensorflow, OpenCV, Point Cloud Library, Git

English

- IELTS 6.5/TOEFL 96

Extracurricular Activities:

- 2011-2013 Product Department Director of iBeiKe, Students' Union
- 2014 James Hutton Institute Volunteer
- 2015 Edinburgh Art Festival Volunteer
- 2020 Student at the UCL Medical Image Computing Summer School (MedICSS 2020)
- 2021 Student at the PRAIRIE / MIAI Artificial Intelligence Summer School (PAISS 2021)