

# Zhihua Liu (刘志华)

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<https://zhihualiued.github.io/>

## Educations

### University of Leicester, Leicester, UK

09/2018 – 12/2024

- MPhil, PhD 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.

### Research Assistant, University of Leicester & Astrosat Ltd

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 (Smart Grid) project.**

## Teaching Experience

### Graduate Teaching Assistant, University of Leicester

09/2018 - 01/2024

### Teaching Assistant, USTB

09/2012 - 02/2014

## Research Projects

### Medical Image Analysis Based on Deep Relational Learning (MPhil Thesis)

09/2020

- Glioma context modeling with feature relational learning on accurate sub-region semantic segmentation
- Spatial correlation modeling with query-key-value relation learning on fetoscopy image mosaicking

### Multi-Classes Training and Testing in Food Preparation Recognition Tasks (BEng Thesis)

06/2015

- Data collection and processing from egocentric food preparation, generated from sensors with Kinect camera, and accelerators
- Utilize a structured SVM as a classifier within hidden Markov model for time-series vision behavior recognition

## Publications

Google Scholar: <https://scholar.google.com/citations?user=je2KXVYAAAAJ&hl=en>

### Pre-prints:

- **BOTM: Paired Echocardiography Segmentation via Bi-directional Optimal Token Matching**  
Zhihua Liu, Huiyu Zhou  
In Progress, 2023
- **Long-short Diffeomorphism Memory Network for Weakly-Supervised Ultrasound Landmark Tracking**  
Zhihua Liu, Bin Yang, Yan Shen, Xuejun Ni, Sotirios A. Tsaftaris, Huiyu Zhou  
MedIA, Under Review, 2023

## Peer-reviewed Conference and Journal 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  
**Complex & Intelligent Systems**, 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 TNNLS**, 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 TAC**, 2022
- **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 TMI**, 2021
- **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

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- **Conference Reviewer**  
BMVC (2019-), ACCV (2020), ECCV (2021-) CVPR (2020-), ICCV (2021-)
- **Journal Reviewer**  
IEEE Transactions on Medical Imaging  
IEEE Transactions on Human-Machine Systems  
IEEE Journal of Biomedical and Health Informatics  
Medical Physics
- **Workshop Organizer**  
**1<sup>st</sup> Workshop for Sino-UK to Promote the Development and Application of Artificial Intelligence** (Leicester, 12<sup>th</sup> Jun 2019,) **AIDAM Winter AI Workshop** (Leicester, 11<sup>th</sup> Dec 2019)  
**AIDAM Winter AI Workshop** (Leicester, 9<sup>th</sup> Dec 2022)

## Honors

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- Graduate Teaching Assistantship (2020)
- USTB People's Scholarships (Top 10%, 2012, 2013)
- USTB Fresh year student Scholarship (Top 5%, 2011)

## Skills

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### Language

- Python, C/C++, MATLAB

### Frameworks

- PyTorch, OpenCV, Point Cloud Library, Git

English, Chinese

## Extracurricular Activities

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- 2014 James Hutton Institute Volunteer
- 2015 Edinburgh Art Festival Volunteer
- 2020 Candidate at the UCL Medical Image Computing Summer School (MedICSS 2020)
- 2021 Candidate at the PRAIRIE / MIAI Artificial Intelligence Summer School (PAISS 2021)
- 2022 Candidate at the UCL Medical Image Computing Summer School (MedICSS 2022)
- 2023 Candidate at the AI and Machine Learning in Healthcare Summer School, Cambridge Centre for AI in Medicine (CCAIM)