ZHI YU

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EDUCATION

University College London **Sep. 2024 - Sep. 2025**
M. Sc. in Advanced Biomedical Imaging *Course Score: 66.79/100*

Harbin Institute of Technology **Sep. 2020 - Jun. 2024**
B. E. in Bioengineering *GPA: 3.6/4.0*

- **Core Courses:** Calculus; Java; C; Biostatistics; Linear Algebra; Biochemistry; Molecular Biology; Cell Biology; Organic Chemistry; Genetic Engineering; Cell Engineering; Immunology; Unit Operation; Biomedical Imaging Techniques; Translational Biomedical Imaging; Translational Clinical Imaging; Precision Diagnosis for Precision Medicine;

RESEARCH EXPERIENCE

Cine MRI Segmentation for Cardiac Function Assessment **Apr. 2025 - Aug. 2025**
Advisor: *Daniel Stuckey, Prof.*

- Segmented bloodpool and myocardium area in short-axis cardiac MR images manually as groundtruth using Horos.
- Used system build-in algorithms to calculate cardiac functional parameters including stoke volume and ejection fraction.
- Implemented supervised learning using UNet3+ on TensorFlow to perform automatic cine MRI segmentation.
- Analysed volumetric parameters with statistical methods e.g. correlation coefficient and Bland-Altman plot.

Laparoscopic Surgical Instruments Binary Segmentation **Sep. 2023 - Feb. 2024**
Advisor: *Wenpeng Gao, Assoc. Prof.*

- Created a novel deep learning network by integrating U-Net architecture with Transformer module.
- Tested the effectiveness of adding multiple attention mechanisms and residual modules to the network backbone.
- Trained and validated on Endovis2017 dataset for binary surgical instruments segmentation using PyTorch.
- Outperformed several existing deep learning networks on the surgical instruments binary segmentation task. - Code

Surgical Phase Detection of Laparoscopic Videos **Mar. 2022 - Jul. 2022**
Advisor: *Wenpeng Gao, Assoc. Prof.*

- Extracted continuous video-based surgical images from Cholec80 dataset using Python.
- Modified the original video frame phase labels to match the extracted frames and implemented data augmentation.
- Performed pretrained AlexNet on acquired images on PyTorch for training and validation with 80% accuracy.

INTERNSHIPS

PeRCeiVe Lab, University of Catania (Remote) **Jan. 2025 - Feb. 2025**
Advisor: *Concetto Spampinato, Prof.*

- Implemented and compared existing deep learning models on Kvasir and NCI-ISBI 2013 Dataset for saliency prediction.
- Selected outperformed model to predicted saliency maps to compare with our novel model on private dataset.
- Utilised the generated saliency maps as prompts for SAM 2-based segmentation.
- Work will be submitted to peer-reviewed journal.

PUBLICATIONS

Surface Deformation Tracking in Monocular Laparoscopic Video **Medical Image Analysis, 2023**

- Z. Liu, W. Gao, J. Zhu, **Z. Yu** and Y. Fu

TECHNICAL SKILLS

Programming language: Python, C++, C, MATLAB
Libraries & Frameworks: PyTorch, TensorFlow

STANDARDIZED TEST

GRE: Quantitive 163, Verbal 151, AW 3.5 (2023)