

Fuyan Zhang

Address: 50 Iona Street, Edinburgh, Scotland

Tel: (+44) 07426 323027 | Email: F.Zhang-42@sms.ed.ac.uk | [Google Scholar Profile](#)

EDUCATION

The University of Edinburgh

MSc in High Performance Computing with Data Science

GPA: 72% (Expected Distinction)

Edinburgh, Scotland

Sep 2025 — Sep 2026

University of Glasgow

BSc (Honors) in Computing Science (Secondary Upper Class (2: 1) Degree)

GPA: 17/ 22 (67-69%)

Glasgow, Scotland

Sep 2022 — Jun 2025

PROFESSIONAL EXPERIENCE

University of Glasgow, School of Computing Science

Research Internship | Supervisor: Dr. Edmond S.L. Ho (Associate Professor)

Glasgow, Scotland

Jul 2025 — Sep 2025

Institute of Computing Technology, Chinese Academy of Sciences (ICT, CAS)

Research Assistant | Supervisor: Dr. Chuanguang Yang (Associate Professor)

Beijing, China

Jun 2024 — Aug 2024

RESEARCH PROJECTS

Dyna-Pruner: Dynamic Data & Model Co-Pruning for Spatio-Temporal Prediction.

Jul 2025 — Mar 2026

First Author | Supervisors: Dr. Edmond S.L. Ho (Associate Professors) | University of Glasgow

- Designed an end-to-end collaborative pruning framework that jointly learns a data mask and a structured model mask from a shared importance field, enabling per-input adaptive computation.
- Demonstrated up to **70%** GFLOPs reduction and **2.5×** inference speedup on edge hardware with $<1\%$ accuracy drop; validated on WeatherBench, SEVIR, and TaxiBJ across CNN/RNN/Transformer backbones.
- ICME 2026 Spotlight:** *Dyna-Pruner: A Framework for Dynamic Data and Model Pruning in Spatio-Temporal Prediction.*

Achieving Fair Medical Image Segmentation in Foundation Models with Adversarial Visual Prompt Tuning.

Research Assistant | Supervisor: Dr. Chuanguang Yang (Associate Professor) | ICT, CAS¹

Nov 2024 — Jul 2025

- Co-authored a paper proposing **AdvVPT (Adversarial Visual Prompt Tuning)**, a novel parameter-efficient approach for **Information Sciences**.
- Developed a method requiring only 0.812M additional parameters while achieving state-of-the-art fairness performance (ES-Dice: 0.8996, ES-IoU: 0.8222 for racial fairness on optic cup segmentation).
- Implemented adversarial training framework to separate demographic-specific biased information from task-relevant features, improving model fairness across race, gender, and other sensitive attributes.

Assessment of Dystonia and Choreoathetosis in DCP from 2D Skeletal Data.

Sep 2024 — March 2025

Bachelor Dissertation | Supervisor: Dr. Edmond S.L. Ho (Associate Professor) | University of Glasgow

- Developed automated deep learning framework for movement disorder assessment using spatial-temporal graph convolutional networks (ST-GCN), achieving **91.8% accuracy** and **71.6% F1-score** for dystonia classification, significantly outperforming baseline methods.
- Implemented simplified model architectures and specialized data augmentation techniques specifically designed for limited clinical datasets, addressing overfitting challenges in medical AI applications.
- Created interpretability framework through edge importance visualization, revealing clinically relevant skeletal connections (ankle-foot joints) that align with medical understanding of dystonia patterns.
- Conducted comprehensive evaluation using Leave-One-Subject-Out cross-validation and ablation studies, demonstrating superior performance across multiple metrics compared to traditional machine learning approaches.

Research on Model Pruning in Medical Image Segmentation.

Jun 2024 — Sep 2024

Research Assistant | Supervisor: Dr. Chuanguang Yang (Associate Professor) | ICT, CAS

- Co-authored the paper **CPG: Channel Pruning for Effective Medical Image Segmentation Using DFS-Guided Grouping** accepted by the **ICONIP 2024** conference (CCF-C, CORE-A).
- Collected and preprocessed large-scale datasets (DSB: 735 images, ISIC: 12,500 images), applying uniform image cropping (96×96 and 512×512) to standardize input data for consistent model performance evaluation.
- Visualized experiment outcomes, showcasing the superior performance of pruned models in segmentation accuracy and computational efficiency, particularly under limited data conditions, making the method highly applicable to medical image segmentation.

¹Institute of Computing Technology, Chinese Academy of Sciences

Research on Neural Network Pruning in Knowledge Distillation.

March 2024 — Aug 2024

Research Assistant | Supervisor: Dr. Chuanguang Yang (Associate Professor) | ICT, CAS

- Co-authored a paper titled *PDD: Neural Network Pruning in Knowledge Distillation* published in the international journal **Cognitive Computation** (JCR-1).
- Conducted extensive data collection and preprocessing to ensure high-quality inputs for model training and validation. This included managing and organizing datasets for optimal accessibility and usability.
- Executed supplementary experiments to validate and reinforce the findings of the primary study. This involved fine-tuning model parameters, analyzing the impact of pruning on model performance, and assessing the effectiveness of the proposed pruning technique.

Kaggle Competition: NeurIPS 2024 - Predict New Medicines with BELKA

Jul 2024

Silver Medal

- Design and implement a **ChemBERTa+BiLSTM** model that integrates chemical structure and protein information to accurately predict the affinity of a given small molecule with three specific protein targets.
- Processing the BELKA dataset of 133 million small molecules, standardizing SMILES data input based on the RDKit library, and converting chemical structures into embedding vectors.
- Gained a deeper understanding of applying machine learning to biological and chemical datasets.

Research on Knowledge Distillation and Key Point Detection Networks (KNN).

March 2024 — Jul 2024

Research Assistant | Supervisor: Dr. Chuanguang Yang (Associate Professor) | ICT, CAS

- Co-authored the paper *Automatic Meter Pointer Reading Based on Knowledge Distillation.* accepted by the **KSEM 2024** conference (CCF-C, CORE-B).
- Collected and analyzed operational data to identify factors affecting meter reading accuracy, including angle tilt, unequal illumination, and distance variations in real-world environments.
- Designed and implemented model fine-tuning and data enhancement strategies, leveraging transfer learning to optimize the student model’s performance based on the knowledge transferred from the teacher model.

ICM/MCM Competition: Sea Lamprey Gender Transformation and Ecosystem Impact

May 2023

Honorable Mention (Team 2416597) | Supervisor: Prof. Gethin Norman (Professor)

- Developed a **Lamprey-Salmon-Ecosystem-Impact Model** based on population interdependence, predicting population changes of salmon species across 8 rivers in the Great Lakes.
- Introduced humans into the model using **Lotka-Volterra Equations** to account for broader ecological impacts.
- Analyzed the influence of food resources on lamprey gender ratios, utilizing **Bayesian hierarchical logistic regression** to predict long-term ecological effects.

PUBLICATIONS

- Yuqi Li, Junhao Dong, Hansheng Zeng, **Fuyan Zhang**, Zeyu Dong, Chuanguang Yang, Yingli Tian. *Towards robust medical image segmentation: Spectro-spatial domain generalization with MRAM and DMIR.* Accepted by Computer Vision and Image Understanding (JCR-Q1).
- Fuyan Zhang***, Yuqi Li, Qing Xu, Chuanguang Yang, Zeyu Dong, Yingli Tian, and Edmond S.L. Ho[†]. *DYNA-PRUNER: Input-Adaptive Data-Model Co-Pruning for Efficient and Scalable Spatio-Temporal Media Prediction.* ICME 2026 (Spotlight).
- Yuqi Li*, Hansheng Zeng*, **Fuyan Zhang**, Chuanguang Yang, Yanli Li, and Weiping Ding[†]. *Efficient Medical Image Segmentation via Reinforcement Learning-Driven K-Space Sampling.* Accepted by IEEE Transactions on Emerging Topics in Computational Intelligence (2024 JCR-Q1).
- Yuqi Li*, Yanli Li, Kai Zhang, **Fuyan Zhang**, Chuanguang Yang, Zhongliang Guo, Weiping Ding, and Tingwen Huang[†]. *Achieving Fair Medical Image Segmentation in Foundation Models with Adversarial Visual Prompt Tuning.* Information Sciences. (2024 JCR-Q1).
- Dan Xi*, Wenjie Yang, **Fuyan Zhang**, Yihang Zhou, Zhuojun Yu, Zhen Qiu, Boyuan Zhao, Zeyu Dong, Libo Huang, and Chuanguang Yang[†]. *PDD: Pruning Neural Networks During Knowledge Distillation.* Cognitive Computation (2024 JCR-Q1): 1-11.
- Xilin Yan*, **Fuyan Zhang**, Yuqi Li, Zhen Qiu, Boyuan Zhao, Jiarui Li, Hansheng Zeng, Yihao Chen, and Chuanguang[†]. *CPG: Channel Pruning for Effective Medical Image Segmentation Using DFS-Guided Grouping.* ICONIP 2024 (CCF-C, CORE-A).
- Sun Rong*, Wenjie Yang, **Fuyan Zhang**, Yanzhuo Xiang, Hengxi Wang, and Yuncheng Jiang[†]. *Automatic Meter Pointer Reading Based on Knowledge Distillation.* KSEM 2024 (CCF-C, CORE-B).

*First Author

[†]Corresponding Author