Siyi Du

PhD Student

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Department of Electrical and Electronic Engineering & I-X
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EDUCATION

2023–on   **Ph.D. in Electrical and Electronic Engineering**
Imperial College London (IC), London, UK | Supervisor: Dr. Chen Qin
• 3.5-year PhD Scholarship
• Research Focus: Multimodal Deep Representation Learning, Medical Imaging, Missing Modality

2021–2023   **M.A.Sc. in Electrical and Computer Engineering**
University of British Columbia (UBC), Vancouver, BC, Canada | Supervisor: Prof. Rafeef Garbi
• Thesis: Deep Learning for Dermatology: Contributions in Model Fairness, Multi-domain Adaptation, and Light-weight Efficiency | GPA: 94% (A+ in all coursework)
• 2-year Graduate Research Assistantship

2017–2021   **B.E. in Automation Science (Patten Recognition direction)**
Beihang University, Beijing, China | Supervisor: Prof. Zengchang Qin
• GPA: 3.83/4.0 (Ranking: Top 5)

RESEARCH EXPERIENCE

2023–on   **Biomedical Image Analysis Group, Imperial College London**
PhD in Machine Learning and Medical Imaging, London, UK
• Developed TIP, a novel self-supervised tabular-image pre-training framework for incomplete and heterogeneous multimodal data, improving AUC by 7% on cardiac disease diagnosis (ECCV 2024).
• Designed STiL, a new semi-supervised tabular-image framework to address limited labeled data, improving AUC by 7% on cardiac disease diagnosis with 1% labeled data (CVPR 2025).
• Designed DyMo, a novel inference-time dynamic modality selection framework for incomplete multimodal data, improving accuracy by 4% on CelebA with missing text (ICLR 2026).

2021–2023   **Biomedical Signal and Image Computing Laboratory, University of British Columbia**
Graduate Research Assistant in Machine Learning, Vancouver, BC, Canada
• First to investigate skin-tone bias in skin lesion classification and developed a novel disentangled contrastive model, improving predictive quality disparity by 2.7% (ECCVW 2022, Best Paper).
• Designed a new multi-domain vision transformer with domain adapters and mutual distillation to mitigate data sparsity in segmentation (MICCAI 2023).
• Designed a new parameter-efficient fine-tuning approach for skin lesion segmentation, matching SOTA performance with 10% parameters and 33% GFLOPs (MICCAIW 2023, Best Paper).

2019–2021   **ICMLL, Beihang University**
Undergraduate Research Assistant in Machine Learning, Beijing, China
• Develop a novel model using graph neural network (GNN) to bridge the cross-modal gap in fine granularity for the visual dialogue task (ACM MM 2020, oral).
• Designed a cost-sensitive visual dialogue framework to reduce data bias (Bachelor thesis).

2020–2020   **Cognitive Robotics and AI Lab, Kent State university**
Summer Research Intern in AI (Mar-Oct), Kent, US
• Proposed a self-supervised image encoder and an action generation module to enable robotic generalization across physical environments.

INDUSTRY EXPERIENCE

2023–2023   **Lenovo Research, Lenovo**
Summer Research Intern in AI (Jul-Sep), Beijing, China
• Built a novel visual-aware large language model (LLM) for sequential recommendation with multi-task pre-training and instruction tuning. Published a patent.

PUBLICATIONS

First-author

2026 Inference-Time Dynamic Modality Selection for Incomplete Multimodal Classification
Du, S., Luo, X., O'Regan, D. P., and Qin, C.. *International Conference on Learning Representations (ICLR)*.

2025 STiL: Semi-supervised tabular-image learning for comprehensive task-relevant information exploration in multimodal classification
Du, S., Luo, X., O'Regan, D. P., and Qin, C.. *Conference on Computer Vision and Pattern Recognition (CVPR)*.

2024 TIP: Tabular-image pre-training for multimodal classification with incomplete data
Du, S., Zheng, S., Wang, Y., Bai, W., O'Regan, D. P., and Qin, C.. *European Conference on Computer Vision (ECCV)*.

2023 AViT: Adapting vision transformers for small skin lesion segmentation datasets
Du, S., Bayasi, N., Hamarneh, G., and Garbi, R.. *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI) ISIC Workshop*. **[Best Paper Award]**

2023 MDViT: Multi-domain vision transformer for small medical image segmentation datasets
Du, S., Bayasi, N., Hamarneh, G., and Garbi, R.. *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*.

2022 FairDisCo: Fairer AI in dermatology via disentanglement contrastive learning
Du, S., Hers, B., Bayasi, N., Hamarneh, G., and Garbi, R.. *European Conference on Computer Vision (ECCV) ISIC Workshop*. **[Best Paper Award]**

Co-authored

2026 Adaptive Conditional Contrast-Agnostic Deformable Image Registration with Uncertainty Estimation
Wang, Y., Luo, X., **Du, S.**, Qin, C.. *IEEE Transactions on Medical Imaging (TMI)*.

2025 SegFormer3D: Improving the robustness of deep learning model-based image segmentation in ultrasound volumes of the pediatric hip
Hers, B., Bonta, M., **Du, S.**, Mulpuri, K., *et al.*. *Ultrasound in Medicine & Biology*.

2024 CAR: Contrast-agnostic deformable medical image registration with contrast-invariant latent regularization
Wang, Y., **Du, S.**, Zheng, S., Luo, X., and Qin, C.. *International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI) WBIR Workshop*.

2024 SGSR: Structure-guided multi-contrast MRI super-resolution via spatio-frequency co-query attention
Zheng, S., Wang, Y., **Du, S.**, and Qin, C.. *International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI) MLMI Workshop*.

2023 Continual-GEN: Continual group ensembling for domain-agnostic skin lesion classification
Bayasi, N., **Du, S.**, Hamarneh, G., and Garbi, R.. *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI) ISIC Workshop*. **[Oral]**

2020 KBGN: Knowledge-bridge graph network for adaptive vision-text reasoning in visual dialogue
Jiang, X., **Du, S.**, Qin, Z., Sun, Y., and Yu, J.. *28th ACM International Conference on Multimedia (ACM MM)*. **[Oral]**

INVITED TALKS

2025 **Semi-supervised tabular-image learning for comprehensive task-relevant information exploration in multimodal classification**
Oral presentation @Multimodal AI Workshop, London, UK

2025 **Multimodal Deep Representation Learning for Medical Data Analysis**
Invited talk, HeartFlow (Medical AI Company), Online

2023 **Adapting vision transformers for small skin lesion segmentation datasets**
Oral presentation @MICCAIW, Online

2022 **Fairer AI in Dermatology via Disentanglement Contrastive Learning**
Oral presentation @ECCVW, Online

OTHER ACTIVITIES

Reviewer

2026	**Conference Reviewer**, International Conference on Learning Representations (ICLR)
2025	**Conference Reviewer**, The IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)
2025	**Conference Reviewer**, International Conference on Computer Vision (ICCV)
2023–2026	**Conference Reviewer**, International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)
2026	**Conference Reviewer**, IEEE International Symposium on Biomedical Imaging (ISBI)
2025	**Journal Reviewer**, IEEE Transactions on Image Processing (TIP)
2023–2025	**Program Committee & Reviewer**, ISIC Skin Image Analysis Workshop @MICCAI Conference

Teaching Assistant

2025–2025	**Teaching Assistant**, Trustworthy Artificial Intelligence in Medical Imaging, IC, UK
2024–2025	**Teaching Assistant**, Computer Vision and Pattern Recognition, IC, UK
2024–2025	**Teaching Assistant**, Deep Learning course, IC, UK
2024–2025	**Teaching Assistant**, Machine Learning course, IC, UK
2022–2023	**Teaching Assistant**, Medical Image Course, UBC, Canada

HONORS & AWARDS

2023–2027	**3.5-year PhD Scholarship**, IC, UK
2023	**Best Paper Award**, 8th ISIC Skin Image Analysis Workshop @MICCAI Conference
2023	**Graduate Support Initiative (GSI) Award**, UBC, Canada
2022	**Best Paper Award**, 7th ISIC Skin Image Analysis Workshop @ECCV Conference
2021–2023	**2-year Research Assistant Scholarship**, UBC, Canada
2021–2023	**International Tuition Award**, UBC, Canada
2020	**Meritorious Winner**, Mathematical Contest in Modeling in USA
2018	**1st Prize**, National Mathematics Competition for College Students, China
2018–2019	**Outstanding Student Award**, Beihang University, China
2018–2019	**Scholarship for Academic Competition**, Beihang University, China

TECHNICAL SKILLS

Machine Learning
- Pytorch
- Tensorflow
- Scikit-learn

Software Programming
- Python
- MATLAB
- C

Hardware Programming
- SolidWorks
- AutoCAD
- Verilog HDL

OTHER INFORMATION

- Nationality: Chinese
- Gender: Female