

Research Group: [biomedia.doc.ic.ac.uk](http://biomedia.doc.ic.ac.uk)  
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Department of Electrical and Electronic Engineering & I-X  
White City Campus  
Innovation & Translation Hub, Imperial College London  
84 Wood Lane, London, UK, W12 7SL

## 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 (Pattern Recognition direction)**  
*Beihang University, Beijing, China* | Supervisor: Prof. Zengchang Qin
- GPA: 3.83/4.0 (Ranking: Top 5)

## WORK & RESEARCH EXPERIENCE

- 2023–on **Biomedical Image Analysis Group, Imperial College London**  
*PhD in Machine Learning and Medical Imaging, London, UK*
- Developed 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 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).
- 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.
- 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.

## PUBLICATIONS

First-author

- 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

- 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

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- 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

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### Reviewer

- 2025 **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)
- 2023–2025 **Conference Reviewer**, International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)
- 2025 **Journal Reviewer**, IEEE Transactions on Image Processing (TIP)
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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

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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

2018–2020 **National Encouragement Scholarship**, Ministry of Education of the People's Republic of China

2018–2019 **Outstanding Student Award**, Beihang University, China

2018–2019 **Scholarship for Academic Competition**, Beihang University, China

## TECHNICAL SKILLS

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### Machine Learning

- Pytorch
- Tensorflow
- Scikit-learn

### Software Programming

- Python
- MATLAB
- C

### Hardware Programming

- SolidWorks
- AutoCAD
- Verilog HDL

## OTHER INFORMATION

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- Nationality: Chinese
  - Gender: Female
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