Xinge Guo

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EDUCATION

Duke University, Durham, NC, USA 2025.8 - Present

Master of Science in Biomedical Engineering

- Overall GPA: 3.83/4.0
- Fellowships: Research Fellowship for BME MS/MEng Students (Fall 2025 & Spring 2026), Merit-based Scholarship (Fall 2025)

Shenzhen University, Shenzhen, China 2021.9 - 2025.6

Bachelor of Engineering in Biomedical Engineering (Class of Excellence)

- Overall GPA: 3.91/4.5
- Fellowships: Top Innovative Talent Scholarship (2024.12 & 2023.12 & 2022.12); Full-Scholarship for Class of Excellence (2021.9)

Research Interests: Image processing, Machine learning, Computer Vision (CV), Image Quality Assessment (IQA)

PUBLICATION

[1] Dai J, **Guo X**, Zhang H, et al. Cone-beam CT landmark detection for measuring basal bone width: a retrospective validation study[J]. BMC Oral Health, 2024, 24(1): 1091.

[2] **Guo X**, Liu W, Cui Z. Efficient Semi-supervised Tooth Instance Segmentation in Panoramic X-Rays Using ResUnet50 and SAM Networks[C]//International Conference on Medical Image Computing and Computer-Assisted Intervention. Cham: Springer Nature Switzerland, 2024: 131-145.

PRFESSIONAL EXPERIENCE

Vision and Image Processing (VIP) Laboratory, Department of Biomedical Engineering, Duke University, Durham, NC, USA

(1)Evaluation of Image Segmentation Difficulty Based on Reinforcement Learning 2025.9.1 - Present

National-Regional Key Technology Engineering Laboratory of China for Medical Ultrasound Shenzhen University, Shenzhen, China

(1)EchoCCLAD: Coordinate Classification Deep Learning Network for Left Ventricle Landmark Detection on Echocardiograms 2024.3 - 2025.4

- Developed a novel lightweight, end-to-end deep learning network for high-precision detection of left ventricle landmarks.
- Achieved state-of-the-art performance with a mean absolute error (MAE) of 2.39mm in LVID measurements and 8.17% in LVEF prediction.
- Conducted in-distribution (ID) and out-of-distribution (OOD) tests, achieving mean absolute percentage errors (MAPE) of 5.6% and 6.4% respectively.

Internship in Department of Radiology and Nuclear Medicine, Erasmus University Medical Center, Rotterdam, the Netherlands

(1)GWAS on AI-based phenotypes derived from structural brain MRI in UKBB cohort 2024.7 - 2024.9

- Conducted GWAS on AI-derived phenotypes from 40,000 brain MRI scans in the UK Biobank.
- Implemented a 3D convolutional autoencoder for brain image analysis.

[1]Medical AI Lab, School of Biomedical Engineering, Shenzhen University Medical School, Shenzhen,

China [2]Guangdong Key Laboratory of Biomedical Measurements and Ultrasound Imaging, School of Biomedical Engineering, Shenzhen University Medical School, Shenzhen, China

(1)The 27th International Conference on Medical Image Computing & Computer Assisted Intervention (MICCAI) - Semi-supervised Tooth Segmentation on Panoramic X-ray Image (STS 2024 Challenge) 2024.10

- Topic: Efficient Semi-Supervised Tooth Segmentation in Panoramic X-rays Using ResUnet50 and SAM Networks
- Developed a semi-supervised learning framework leveraging ResUnet50 and the Segment Anything Model (SAM) to improve tooth instance segmentation accuracy in 2D panoramic X-ray images.

(2)CBCT Landmark Detection for Measuring Basal Bone Width: A Retrospective Validation Study 2022.8 - 2024.4

- Developed a U-Net-based deep learning model for precise orthodontic landmark detection on CBCT images.
- Employed a coarse-to-fine approach, reducing mean radial error to 1.22mm and achieving detection accuracies up to 91.18%.
- Compared automated measurements with manual ones using the concordance correlation coefficient (CCC), achieving high consistency (CCC: 0.96 for maxillary, 0.98 for mandibular).

SKILLS

Language: English (Fluent, IELTS 7.5), Mandarin (Native), Cantonese (Native)

Programming Skills: Python, MATLAB, VHDL, Assembly Language, C/C++

Piano playing: Associate Diploma of the London college of Music (University of West London, 2022.4)