Xiaotian Hu

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Education

Beihang University, School of Biological Science and Medical Engineering Sept 2023 – Jun 2027
Bachelor of Engineering in Biomedical Engineering

- **General Engineering (Aerospace Track)**, 2023.09–2024.06: Avg. Score: 93.54/100, **Rank: 1/416**
- **Biomedical Engineering**, 2023.09–2025.06: Avg. Score: 94.04/100, **Rank: 1/50**
- **National Scholarship**, awarded **twice** (Top 0.2% nationwide)
- **Selected Coursework:** Linear Algebra (100), Engineering Graphics (100), Numerical Analysis (100), Fundamental Physics B (100), Mathematical Analysis for Engineering (98), Probability and Statistics (97), Methods of Mathematical Physics (96)
- **Technologies:** Python, C, PyTorch, LaTeX, MATLAB, SolidWorks, CET-4, CET-6 (537)

Publications

CONFERENCE PAPERS (SELECTED)

[1] **X. Hu**, et al. *INSTA: Implicit Neural Spatio-Temporal Atlas from Thick-Slice Clinical Fetal Brain MRI*. ISMRM Workshop on Unlocking the Potential of Prenatal MRI: Advances in Fetal Brain, Heart & Placenta Imaging, 2026. Oral.

[2] **X. Hu**, et al. *Benchmarking Spatiotemporal Fetal Brain Atlas Construction*. OHBM Annual Meeting (OHBM), 2026. Poster.

[3] **X. Hu**, J. Huang, M. Liu, et al. *FetalAgents: A Multi-Agent System for Fetal Ultrasound Image and Video Analysis, MICCAI 2026 (**Early Accept, Top 9%**)*. [code]

[4] **X. Hu**, M. Liu, H. Yang, et al. *INFANiTE: Implicit Neural Representation for High-Resolution Fetal Brain Spatio-Temporal Atlas Learning from Clinical Thick-Slice MRI, MICCAI 2026 (Under Review)* [code]

PLANNED SUBMISSION (SELECTED)

[5] **X. Hu**, M. Liu, et al. *Towards Reliable Fetal Ultrasound Interpretation with Multi-Agent Collaboration*. Preparing for submission to IEEE Journal of Biomedical and Health Informatics (JBHI). [code]

Awards and Honors

- National Scholarship (Top 0.2% nationwide) 2024, 2025
- Outstanding Student 2024, 2025
- Merit Student 2024, 2025
- Learning Excellence Scholarship, Special Prize 2024, 2025
- Academic Competition Scholarship, Special Prize 2024, 2025
- Outstanding Individual in Medical-Engineering Interdisciplinary Studies 2024, 2025
- Meritorious Winner, Mathematical Contest in Modeling (MCM) 2024.05

- AI4Life Supervised Microscopy Image Denoising Challenge, Second Place 2025.09
- First Prize, 16th Chinese Mathematics Competition for College Students 2024.12
- First Prize, 35th Beijing College Student Mathematics Competition 2024.12
- Third Prize, 40th National College Physics Competition (Selected Regions) 2024.12
- Third Prize, Beihang University Physics Competition 2024.12
- Social Work Excellence Scholarship, Second Prize 2024

Projects

Multi-Agent Fetal Ultrasound Analysis System [Code]

- Developed FetalAgents, a tool-augmented multi-agent framework for fetal ultrasound VQA, report generation, image captioning, and video summarization
- Designed a Dual-Path Evidence Arbitration module and a retrieval-enhanced Memory Bank to fuse LLM reasoning, expert tool outputs, and external knowledge for grounded reporting
- Built Fetal VQA, the first dedicated fetal ultrasound VQA benchmark, and curated a multi-dataset evaluation suite across 7 clinical tasks

High-Resolution Fetal Brain Atlas Construction from Clinical Thick-Slice MRI [Code]

- Proposed the first framework to construct high-resolution spatio-temporal fetal brain atlases directly from clinical thick-slice MRI scans using implicit neural representations (INRs)
- Eliminated the need for slice-to-volume reconstruction, accelerating the atlas construction pipeline from days to hours
- Enabled scalable population-level atlas construction compared with conventional 3D volume-based pipelines such as SyGN