Xinyu Fu

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Objective

Seeking a **visiting research intern** or **research assistant position** in the field of **brain-computer interfaces**, **medicial artificial intelligence** and **computational neuroscience** to leverage my expertise in scientific research. Aiming to contribute to innovative projects at the **intersection of health science and artificial intelligence**.

Education

- **South China University of Technology[🌐]** *September 2023 - Present*
  Bachelor of Engineering in Biomedical Engineering Guangzhou, China
  - GPA: 3.89/4.00 Rank: 4/42
  - Major Courses: Calculus (97); General Physics I (97); General Physics II (92) Python Programing (90); Artificial Intelligence and Deep Learning (92); Data Analysis and Machine Learning (99); Electric Circuit and Electronics (93); Probability and Statistics (88); Linear Algebra (85); Computer Basics (89); Signals and Systems (91); Physiology (95); Anatomy (95)

- **Southern University of Science and Technology[🌐]** *September 2025 - Present*
  Visiting Student of Neural Computing & Control lab Shenzhen, China

Research Experiences

- **Mixed Reality and Intelligent Interaction Laboratory[🌐]** *September 2024-Present*
  Undergraduate Research Assistant Guangzhou, China
  - Developing an **EEG emotion classification algorithm** based on **domain generalization**, **self-supervised learning** and **GNN/GCN methods**. The work is based on DEAP and SEED dataset.
  - Based on **Laplace-EEG (LEEG)** acquisition electrodes, an experimental paradigm for **EEG fatigue recognition** was designed, and data from 16 subjects were collected and experimentally studied.
  - Based on the design of Laplace electrodes, the **brain network modeling** method is used to extract specific features for LEEG to enhance the EEG task recognition accuracy.
- **Medical Informatics and Neuroimaging Lab [🌐]** *December 2023 - July 2024*
  Undergraduate Research Assistant Guangzhou, China
  - Develop a **research platform** integrating comprehensive EEG data acquisition, data analysis and status monitoring into one multifunctional platform, using data analysis algorithms such as **heart rate variability analysis**, **EEG rhythm extraction**, and **heart-brain coupling analysis**.
  - Conducted experiments in hospital by using **flexible wearable ECG and EEG sensors**, analysising data from real heart attack patients. Research found that **cardio-cerebral coupling differences** in patients with heart attack was mainly between temporal and occipital lobe.
  - Presented findings at the Ninth National College Student Biomedical Engineering Innovation Design Competition.
- **Healthcare Data and Medical Intelligence Laboratory [🌐]** *March 2024-Present*
  Student Research Program Researcher Guangzhou, China
  - Primarily explore the use of **generative AI** to address **Anterior Segment Optical Coherence Tomography(AS-OCT)** image inpainting, adopting **transformer** and **GAN**. Apply **AOT-GAN** in our AS-OCT auto-diagnostic agent system.
  - Investigating **MedSAM and unet based segmentation algorithms** for improving AS-OCT parameter measurement and disease diagnosis accuracy.
  - Won the honorable mention in the China International Student Innovation Competition, third prize in 10TH International Biomedical Engineering Innovation Design Competition. Published two Chinese invention patent.

Patents and Publications

C=Conference, J=Journal, P=Patent, T=Thesis

[P.1] W.Yang, J.Liu, **X.Fu**, et al. (2024). **Anterior segment parameter measurement method and device, electronic device, and storage medium**. C.N. Patent, Patent No. CN119107380A. Invention Patent.

[P.2] X.Li, H.Yu, **X.Fu**, et al. (2025). **Preparation method and application of bismuth ion chelated ultrasmall gold nanoparticles cleared by kidneys**. C.N. Patent Application No. CN202510206802.6. Invention Patent. Patent Pending.

[C.1] Z.Liu, H.Fang, **X.Fu**, et al. **Dataset, Baseline and Evaluation Design for GAVE Challenge**. The 12th OMIA Workshop on MICCAI 2025, Daejeon, South Korea.

[P.3] J.Zhao, **X.Fu**, Y.Yang, et al. (Under Application). **AS-OCT Automated Diagnostic System for Full Processes Driven by Intelligent Bodies**. C.N. Patent. Invention Patent.

[J.1] J.Zhao, **X.Fu**, Y.Yang, et al. (Co-first Author, In Preparation). **A Multimodal AS-OCT Dataset for Glaucoma and Cataract Diagnosis**. Submitted to *Scientific Data*.

Skills

- **Programming Languages:** Python, C/C++, Anaconda, Linux
- **AI & Machine Learning:** OpenCV, Scikit-learn, Pytorch, CUDA
- **Microsoft Office Software:** Word, Excel, Powerpoint
- **Mathematical & Statistical Tools:** Matlab, Python
- **Biomedical Engineering Research Tools:** Origin, GraphPad Prism, Bio Render
- **Other Tools and Skills:** LaTeX, Markdown, Git, VMWare Workstation, EDA Design, Photoshop, XIUMI, WordPress

Language

Languages: English(fluent, CET-4: 612; CET-6: 564), Mandarin(native)

Honors and Awards

- **First Prize Scholarship of School** *October 2025*
  South China University of Technology
- **Third Prize Scholarship of School** *November 2024*
  South China University of Technology
- **Merit Student of School** *December 2024*
  South China University of Technology
- **EVE Energy Co., Ltd Scholarship** *October 2024*
  EVE Energy Co., Ltd
- **Honorable Mention Reward in Mathematical Contest in Modeling (MCM/ICM)** *May 2025*
  The Consortium for Mathematics and its Applications
- **First Prize in Contemporary Undergraduate Mathematical Contest in Modeling (Guangdong)** *October 2024*
  China Society for Industrial and Applied Mathematics
- **Third Prize in Contemporary Undergraduate Mathematical Contest in Modeling (Guangdong)** *October 2025*
  China Society for Industrial and Applied Mathematics
- **Special Prize in School's "Challenge Cup" Competition** *March 2025*
  South China University of Technology
- **First Prize in Shenzhen Cup Mathematical Modeling Competition (Guangdong)** *June 2025*
  Chinese Society for Industrial and Applied Mathematics
- **Second Prize in "Great Bay Area Cup" Financial Mathematical Modeling Competition** *December 2024*
  Guangdong Society of Industrial and Applied Mathematics
- **Second Prize in MathorCup Math Application Challenge of South China Region** *May 2025*
  Chinese Society for Preferential Methods & Integration Methods and Economic Mathematics
- **Third Prize in 10TH International Biomedical Engineering Innovation Design Competition** *July 2025*
  Chinese Society of Biomedical Engineering

Volunteer Experience

- **2024 Rural Social Practice in Kongmei Villages** *July 2024*
  South China University of Technology & Huilai County Committee of the Communist Youth League [🌐]
  - Captured and documented moments of volunteer activities, using drones to capture important photos and videos.Drowning prevention classroom knowledge was taught in local elementary schools.
  - Helped local villagers and children popularize knowledge about drowning prevention.
  - Won the summer social practice advanced individual. The team was honored as a extraordinary case of Guangdong Province's One Million Project commando team.
- **2025 Rural Social Practice in HeShan Shaping Middle School** *July 2025*
  South China University of Technology & Shaping Middle School [🌐]
  - Team leader for a 18-member volunteer team, responsible for communications, team recruitment, task distribution. Managed event photography and drafted promotional articles.
  - Delivered New Engineering and Intangible Cultural Heritage education at local middle schools, enabling students to acquire advanced knowledge.
  - Won the summer social practice advanced individual.
- **Academic Mentor for New Students** *August 2024 - July 2025*
  South China University of Technology [🌐]
  - Provide new students with academic guidance, direction in life, and friendships. Lead students to participate in research projects, explain and share experiences for related competitions.
  - Recognized as a Peer Leader Star.
- **One-Star Volunteer** *May 2025*
  South China University of Technology
  - Recognition and commendation for completing 100 hours of volunteer service.