Xingyu Lu

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EDUCATION

Zhejiang University **Hangzhou, China**
B.Eng. in Biomedical Engineering *Sep. 2022 - Jun. 2026*

- Overall GPA: 3.71/4.3 (83.93/100)
- Last two years GPA: 3.87/4.3
- Core Courses: Computer Graphics, Biomedical Imaging Processing, Biomedical Imaging Technology, Biomedical Signal Processing, Biomedical Sensors and Measurement, Intelligent Information Processing, Embedded Systems

PUBLICATIONS

- *RLCAD: Reinforcement Learning Training Gym for Revolution Involved CAD Command Sequence Generation*. Yin, X.[1], **Lu, X.**[1], Shen, J., Ni, J., Li, H., Tong, R., Tang, M., & Du, P. (2025). arXiv preprint arXiv:2503.18549. **Under review at *Computer-Aided Design***.

RESEARCH EXPERIENCE

MBTI Predictor Based on User Produced Content *Mar. 2024 - May. 2025*

- Advisor: Prof. Nai Ding, China National University Student Innovation & Entrepreneurship Development Program
- Obtained national level project approval (top 10%).
- Integrated a large-scale text-mbti dataset and developed a seq2seq model based on the hybrid BERT-Transformer architecture. This model performs encoding simultaneously at both the sentence and token levels. As a result, it has achieved a state-of-the-art F1-score of 84.31 in MBTI personality classification benchmarks, representing a 1.49% improvement over the previous SOTA.

fMRI-Based Alzheimer's Prevention *Dec. 2024 - Present*

- Advisor: Prof. Zixuan Lin, Key Lab for Biomedical Engineering of Ministry of Education, Zhejiang University
- Developed a lightweight fMRI preprocessing pipeline that can achieve BOLD-to-T1w-to-MNI152 registration and is equipped with high-quality control protocols. Currently, designing and conducting an analysis experiment on the correlation between Cerebrovascular reactivity (CVR) and cognition.

RLCAD: RL-based Gym for CAD Command Sequence Generation *Oct. 2024 - Jun. 2025*

- Advisor: Prof. Peng Du, Prof. Min Tang & Prof. Ruofeng Tong, the State Key Laboratory of CAD&CG, Zhejiang University
- Built an RL training environment (gym) on a CAD geometric engine. Designed a cross-modal policy network with dual attention mechanisms. The network generates actions from input B-Rep geometries. These actions, processed in the gym, produce CAD geometries fed back for RL network updates based on geometry-difference rewards. Our method supports additional revolution operations compared to previous work, reaches SOTA in command-sequence generation from B-Reps, and boosts generation efficiency 39X over the previous gym.

PROJECTS

- **End-to-End Bone Age Estimation Based on Hand X-Ray Images**
  Developed an end-to-end model for bone age prediction using a pre-trained Dinov2 architecture. Leveraged transfer learning to fine-tune the model on a limited hand X-ray dataset, achieving a mean absolute error (MAE) of 7 months. Ranked in the top 5% of project performances in the Biomedical Image Processing course.
- **Multimodal Guide System for the Visually Impaired Based on ESP32**
  Built a voice-interactive navigation system using ESP32-S3, combining camera and ultrasonic sensor data with vision-language and large language models to enable obstacle detection and real-time audio guidance.

SKILLS

Programming Languages C, MATLAB, Python, Verilog, Java
Languages English (IELTS: Preparation in Progress), Mandarin (Native)