Jiaxin Xiao

Female, May 19th, 2001

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EDUCATION

Department of Electronic Engineering, Tsinghua University, China
B.E. in Electronic Engineering **Overall GPA: 3.82/4.0** **Major GPA: 3.81/4.0** **Ranking: top 23%**
Core Courses: Data and Algorithm (A) / Advanced Matlab Programming and Its Application (A+) / Computer Program Design (A) / Fundamentals of Statistical Signal Processing (A) / Basic Experiments for Electronic Circuits and Systems (A) / Fundamental Experiment of Digital Logic and Processor (A) / Probability and Stochastic Processes (A-)
English Test: **TOEFL 109** (reading 29 listening 30 speaking 24 writing 26)

RESEARCH EXPERIENCE

Training neural networks for super-resolution MRI using noisy high-resolution reference data 8/2022 – present
Advisor: Qiyuan Tian, Instructor in Radiology (Martinos Center for Biomedical Imaging, Harvard Medical School)

- Designed and conducted both simulation and empirical data experiments and demonstrated comparable effectiveness in the training with noisy high-resolution reference data and clean data in super-resolution tasks;
- Simulated the low-resolution image volume and noisy high-resolution image volume, and realized the neural network MU-Net based on Tensorflow;
- Demonstrate that a smaller number of repetitions of high-resolution reference data for averaging can be adopted to achieve slightly compromised super-resolution performance and improve feasibility and accessibility.

High-frequency oscillations detection using Transformer-based neural network 6/2022 – present
Advisor: Dominique Duncan, Assistant Professor of Neurology (University of Southern California)

- Designed independently a Transformer-based neural network for the EEG high-frequency oscillation (HFO) detection;
- Pre-processed EEG signals using Matlab, added a linear projection layer before the Transformer, and redesigned the Encoder-Decoder layer to give specific detections of HFO segments;
- Obtained preliminary results that show the outperformance over the four automatic detectors that are widely used in labs and the previously proposed CNN-based detector;
- Currently working on further model optimization and validation.

CNN model for sustained attention level evaluation using EEG 09/2021 – 12/2021
Advisor: Milin Zhang, Associate Professor of Electronic Engineering (Tsinghua University)

- Built a CNN for attention level classification, consisting of four convolutional blocks, a GAP layer, and a linear layer;
- Constructed each convolutional block with a 1-d convolutional layer, a 1-d batch normalization (BN) layer, and a rectified linear unit (ReLU) layer;
- Optimized convolutional blocks' structure and achieved a subject independent (SI) accuracy of 90%, which is reliable for the attention evaluation application.

PUBLICATION

1. **Jiaxin Xiao**, Zihan Li, Berkin Bilgic, Jonathan R. Polimeni, Susie Huang, Qiyuan Tian, "SRNR: Training neural networks for *S*uper-*R*esolution MRI using *N*oisy high-resolution *R*eference data", submitted to ISMRM.
2. Chao Zhang, Zijian Tang, Taoming Guo, Jiaxin Lei, **Jiaxin Xiao**, Anhe Wang, Shuo Bai, Milin Zhang, "SaleNet: A low-power end-to-end CNN accelerator for sustained attention level evaluation using EEG", 2022 IEEE International Symposium on Circuits & Systems (ISCAS 2022).

LEADERSHIP AND ACTIVITIES

Student Union in Department of Electronic Engineering | Director of Students' Rights and Interests Department

- Host Course Seminars for 10 core courses in the Department of Electronic Engineering 05/2021 – 07/2022
- Interview course teachers and produce promotional videos

SELECTED HONORS AND AWARDS

Scholarship for Academic Excellence (top 20%) 2020 & 2021
Third Prize of the Intelligent Unmanned Aerial Vehicle Challenge (top 4 in Tsinghua) 2021
Scholarship for Social Practice Excellence (top 2%) 2020

SKILLS

Programming: MATLAB, Python, PyTorch, TensorFlow, Keras, C/C++, Verilog HDL, LATEX, git, ROS
Languages: Mandarin Chinese, English (Proficient in reading, speaking, listening, and scientific English writing)