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: 3.82/4.0**
Relevant Coursework: Data and Algorithm (A) / Advanced Matlab Programming and Its Application (A+) / Computer Program Design (A) / Statistical Signal Processing (A) / Fundamental Experiment of Digital Logic and Processor (A)
English Test: TOEFL 109 (Reading 29, listening 30, speaking 24, writing 26)
Programming: MATLAB, Python, PyTorch, TensorFlow, Keras, C/C++, Verilog, LATEX, git, ROS

PUBLICATIONS

1. **Xiao J**, Li Z, Li Z, Bilgic B, Polimeni J, Huang S, Tian Q, "Improving the feasibility of deep learning based *S*uper-*R*esolution MRI using *N*oisy high-resolution *R*eference data (SRNR)", accepted for presentation at the 2023 ISMRM Workshop on Data Sampling & Image Reconstruction.
2. **Xiao J**, Li Z, Bilgic B, Polimeni J, Huang S, Tian Q, "SRNR: Training neural networks for *S*uper-*R*esolution MRI using *N*oisy high-resolution *R*eference data", submitted to 2023 ISMRM Annual Meeting.
3. **Xiao J**, Li Z, Li Z, Bilgic B, Polimeni J, Huang S, Tian Q, "SRNR: Training neural networks for *S*uper-*R*esolution MRI using *N*oisy high-resolution *R*eference data", in preparation, to be submitted to Magnetic Resonance in Medicine
4. Tabari A, Tian Q, Goh M, Lio A, Filho A, Cartmell S, **Xiao J**, Gee M, Huang S, Conklin J, "High-fidelity fast pediatric anatomical MRI through synergistic Wave-MPRAGE and image denoising", in preparation.
5. ..., **Xiao J**, ..., Tian Q, "White matter microstructural alterations in developmental stuttering measured by high-sensitivity multi-shell diffusion MRI", in preparation
6. Zhang C, Tang Z, Guo T, Lei J, **Xiao J**, Wang A, Bai S, Zhang M, "SaleNet: A low-power end-to-end CNN accelerator for sustained attention level evaluation using EEG", 2022 IEEE International Symposium on Circuits and Systems.

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 experiments and demonstrated comparable effectiveness in training with noisy high-resolution reference data and clean data in super-resolution tasks.
- Simulated low-resolution and noisy high-resolution image volume, calibrated the bias between the up-sampled and high-resolution images in empirical data, and trained the neural network MU-Net based on Tensorflow.
- Demonstrated that a smaller number of repetitions of high-resolution reference data for averaging can be adopted to achieve slightly compromised super-resolution performance but greatly enhance 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)

- Independently designed a Transformer-based neural network for 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.
- Compared to the previously proposed CNN detector, our model relied on only 1/10 of the training data and achieved only a slightly inferior performance with nearly the same amount of network parameters.

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, which consists of 4 convolutional blocks, a GAP layer, and a linear layer;
- Constructed each convolutional block with a 1-d convolutional layer, a 1-d BN layer, and a ReLU layer.
- Optimized the structure of convolutional blocks and achieved a subject independent accuracy of 89.8%.

LEADERSHIP AND ACTIVITIES

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

- Hosted course seminars for 10 core courses in the Department of Electronic Engineering 05/2021 – 07/2022
- Interviewed course teachers and produced promotional videos

SELECTED HONORS AND AWARDS

Scholarship for Academic Excellence (top 10%) 2020, 2021
Third Prize of the Intelligent Unmanned Aerial Vehicle Challenge (top 4 in Tsinghua) 2021
Scholarship for Social Practice Excellence (top 2%) 2020