Chao Zhang

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RESEARCH INTERESTS

Brain-machine/computer Interface (BMI/BCI), Digital Circuit, EEG Processing

EDUCATION

Tsinghua University, Beijing, China   Aug. 2020 - Jun. 2025
PhD student in Department of Electronic Engineering
Advisor: Prof. Milin Zhang

Tsinghua University, Beijing China   Aug. 2016 - Jun. 2020
B.E. in Department of Electronic Engineering
GPA: 3.7/4.0; Rank: 30%

PHD THESIS

Low power consciousness level evaluation based on prefrontal EEG

ON-GOING RESEARCHES

Design of a closed-loop SoC for sleep staging and optogenetic stimulation (2022.03-2024.04)
Low power anesthesia depth monitoring system based on prefrontal EEG (2023.04-2025.03)

PUBLICATIONS

1. **Chao Zhang**, Yongxiang Guo, Dawid Sheng, Zhixiong Ma, Chao Sun, Yuwei Zhang, Wenxin Zhao, Fenyan Zhang, Tongfei Wang, Xing Sheng, Milin Zhang. A Closed-loop Brain-Machine Interface SoC Featuring a 0.2μJ/class Multiplexer Based Neural Network. Accepted by *2024 IEEE Custom Integrated Circuits Conference (CICC 2024)*.

2. Siqi Han*, **Chao Zhang***, Jiaxin Lei, Qingquan Han, Yuhui Du, Anhe Wang, Shuo Bai, Milin Zhang. Cepstral Analysis Based Artifact Detection, Recognition and Removal for Prefrontal EEG. *IEEE Transactions on Circuits and Systems II: Express Briefs (TCAS-II 2023)*.

3. Qingquan Han*, **Chao Zhang***, Taoming Guo, Yajie Tian, Wei Song, Jiaxin Lei, Qi Li, Anhe Wang, Milin Zhang, Shuo Bai, Xuehai Yan. Hydrogel Nanoarchitectonics of a Flexible and Self-Adhesive Electrode for Long-Term Wireless Electroencephalogram Recording and High-Accuracy Sustained Attention Evaluation. *Advanced Materials (AM 2023)*.

4. **Chao Zhang**, Siqi Han, Milin Zhang. Single-channel EEG completion using Cascade Transformer. *In 2022 IEEE Biomedical Circuits and Systems Conference (BioCAS 2022)*.

5. **Chao Zhang***, Yiqiao Liao*, Siqi Han, Milin Zhang, Zhihua Wang, Xiang Xie. Multichannel Multidomain-Based Knowledge Distillation Algorithm for Sleep Staging With Single-Channel EEG. *IEEE Transactions on Circuits and Systems II: Express Briefs (TCAS-II 2022)*.

6. **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. *In 2022 IEEE International Symposium on Circuits and Systems (ISCAS 2022).*

7. Yiqiao Liao, **Chao Zhang**, Milin Zhang, Zhihua Wang, Xiang Xie. LightSleepNet: Design of a personalized portable sleep staging system based on single-channel EEG. *IEEE Transactions on Circuits and Systems II: Express Briefs (TCAS-II 2021).*

8. Zijian Tang, **Chao Zhang**, Yahao Song, Milin Zhang. Design of a seizure detector using single channel eeg signal. *In 2021 IEEE International Symposium on Circuits and Systems (ISCAS 2021).*

9. Milin Zhang, Ziyao Zhao, Yuan Ma, **Chao Zhang**, Wei Song, Jiaxin Lei, Chao Xie. Wireless Compact Neural Interface for Freely Moving Animal Subjects: A Review on Wireless Neural Interface SoC Designs. *IEEE Solid-State Circuits Magazine (SSCM 2023).*

* Equal Contribution

AWARDS

Comprehensive Excellence Award of Tsinghua University (¥5,000)	2023
Comprehensive Excellence Award of Tsinghua University (¥5,000)	2022
Excellent Teaching Assistant Scholarship of Department of EE (¥5,000)	2022
Excellent Teaching Assistant Scholarship of Tsinghua University (¥2,000)	2022
Comprehensive Excellence Award of Tsinghua University (¥5,000)	2019
Second-class scholarship for freshmen of Tsinghua University (¥20,000)	2016

ACADEMIC SERVICES

Reviewer: ISCAS 2021, ISSCC 2023/24, JBHI, Proceedings of IEEE

SKILLS

Software: Python (Pytorch, Python-MNE), C/C++, Matlab
Hardware: SystemVerilog, Synopsys digital flow (VCS+DC+ICC)