

## Chao Zhang

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### RESEARCH INTERESTS

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

### EDUCATION

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Tsinghua University, Beijing, China Aug. 2020 - Jun. 2025

Ph.D. 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

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Low power consciousness level evaluation based on prefrontal EEG

### ON-GOING RESEARCHES

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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

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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  $0.2\mu\text{J}/\text{class}$  Multiplexer Based Neural Network. Accepted by 2024 *IEEE Custom Integrated Circuits Conference (CICC 2024)*.

2. Siqi Han\*, **Chao Zhang**\*, Jiabin 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, Jiabin 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, Jiabin Lei, Jiabin 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, Jiabin 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**

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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**

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

## **SKILLS**

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Software: Python (Pytorch, Python-MNE), C/C++, Matlab

Hardware: SystemVerilog, Synopsys digital flow (VCS+DC+ICC)