Jiahe Shi

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EDUCATION BACKGROUND

School of Microelectronics, Fudan University (FDU) Shanghai, P.R. China
Master Degree in Design of Integrated Circuits and System 2021.09 - 2024.06 (expected)
Overall GPA: 3.76/4.0 Rank: 3/125

School of Microelectronics, Fudan University (FDU) Shanghai, P.R. China
Bachelor Degree in Science & Engineering of Microelectronics 2017.09 - 2021.06
Core courses: *Semiconductor Physics, *Fundamentals of Digital Logic, *Analog Circuit, *Computer Architecture, *Digital Integrated Circuit Design, *ADC/DAC, *Computer Software, *ASIC Design Methodology (*: A level)
Overall GPA: 3.68/4.0 Major GPA: 3.80/4.0 Rank: 8/115

McMaster University Hamilton, ON, Canada
Summer Entrepreneurship & Innovation Program 2018.07 - 2018.08

PUBLICATION

Jiahe Shi, Yawen Wu, Dewen Zeng, Jun Tao, Jingtong Hu, and Yiyu Shi, "Self-supervised On-device Federated Learning from Unlabeled Streams," *TCAD* 2023. (Submitted)

Yizhuo Wang, **Jiahe Shi**, Hao Xu, Shujiang Ji, Yiyun Mao, Tenghao Zou, Jun Tao, Hao Min, and Na Yan, "A 7.9-14.3GHz, 85-fsrms Calibration-Less PLL Enabled by a Dual-Mode VCO with Inherent Mode Compensation," *JSSC* 2023. (Accepted)

Jiahe Shi, Zhengqi Gao, Jun Tao, Yangfeng Su, Dian Zhou and Xuan Zeng, "Multi-corner Parametric Yield Estimation via Bayesian Inference on Bernoulli Distribution with Conjugate Prior," *ISCAS* 2020. (Oral)

Fengshi Tian, Jingwen Jiang, Jinhao Liang, Zhiyuan Zhang, **Jiahe Shi**, Chaoming Fang, Hui Wu, Xiaoyong Xue, Xiaoyang Zeng, "NIMBLE: A Neuromorphic Learning Scheme and Memristor Based Computing-In-Memory Engine for EMG Based Hand Gesture Recognition," ISCAS 2022. (Oral)

RESEARCH EXPERIENCE

Federated Contrastive On-device Learning 2022.06 - 2022.12
Advisor: Yiyu Shi, Professor at Department of Computer Science and Engineering, University of Notre Dame

- Developed a framework aiming to enable self-supervised learning from input unlabeled data streams in a network of edge devices with limited storage resources.
- Proposed a coreset selection method based on importance scoring to update local data buffer.
- Achieved a better classification accuracy and label efficiency over the state-of-the-art methods.
- Contributed to a **first-author** paper which is submitted to ***IEEE TCAD.***

Multi-corner Parametric Yield Estimation via Bayesian Inference 2019.03 - 2019.10
Advisor: Jun Tao, Professor at ASIC & System State Key Lab, School of Microelectronics, FDU

- Proposed a novel method to estimate multi-corner parametric yield via Bayesian inference on Bernoulli distribution with conjugate prior.
- Encoded the correlation of the circuit output over multiple corners into the yield estimation model.
- Achieved up to 2.0× cost reduction over the state-of-the-art methods without surrendering any accuracy.
- Contributed to a **first-author** paper which was accepted by ***ISCAS 2020.***

Efficient Communication for Federated Learning 2022.03 - 2023.03
Advisor: Jun Tao, Professor at School of Microelectronics, FDU; Xin Li, Professor at Duke Kunshan University

- Literature research on Federated Learning with better communication efficiency.

Failure Detection of AMS Circuits by High-Dimensional Bayesian Optimization 2020.08 – 2020.10
Advisor: Peng Li, Professor at Electrical and Computer Engineering, University of California, Santa Barbara

- Proposed a method to improve the quality and the computational efficiency of analog and mixed-signal (AMS) verification under high-dimensional process variations.
- Used active learning to reduce the dimensionality of the verification problem with Bayesian optimization.

A Rubbish Cleaning Boat Controlling System (sponsored by Google) 2019.06 - 2019.12

Advisor: Qing Lin, Instructor at School of Microelectronics, FDU

- Built a rubbish boat controlling system for automatic driving and garbage detection.
- Applied TensorFlow and OpenCV to build a YOLOv3 model on RaspberryPi and accelerated the inference speed to manage the real-time input video at 4fps using NCS2.
- Reduced the cost and power consumption of cleaning boat and improved the cleaning efficiency.

PROFESSIONAL& LANGUAGE SKILLS

Hardware	Cadence EDA tools | Vivado | Quartus
Software	Proficient in MATLAB, C, Unix Shell, Python (PyTorch, Tensorflow)
Skills	Circuit analysis and basic analog circuits design | Machine learning, optimization algorithm
	FPGA design and development | Principles of semiconductor physics and devices technology
Language	Native in Mandarin, Fluent in English (TOEFL: 105, GRE: 331+4.0)

ACHIVEMENTS & AWARDS

KLA Excellent Graduate Student Scholarship	2022
Shanghai Outstanding Graduates	2021
National Scholarship	2020
China-U.S. Young Maker Competition, Third prize in Shanghai Division	2020
Mathematical Contest in Modeling, First prize in Shanghai Division	2019
Academic Excellence Awards for Outstanding Student, FDU	2018

EXTRACURRICULAR ACTIVITIES

Teaching Assistant, Analog Circuits, FDU 2022. 09 – 2023.01

- Organized online courses and exams for undergraduate course at School of Microelectronics, Fudan University
- Graded the homework and answered questions during office hours

Teaching Assistant, GEC Academy 2020. 07 – 2020.08

- Helped organize online courses *Building an ECG Sensor* taught by Professor Patrick Mercier from UCSD
- Graded the homework and answered questions during office hours

Director, Student Union of School of Microelectronics, FDU 2018. 06 - 2019.02

- Initiated and organized a company tour involving 40 participants
- Organized a workshop where professors share and discuss the up-to-date technology with students