

# Juzheng Liu

## Curriculum Vitae

### PERSONAL DETAILS

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### EDUCATION

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**Bachelor of Science** 2015-19  
*Department of Physics, Tsinghua University; Major: Mathematics and Physics; GPA:3.62(4.0); Rank:10/51*

**PhD of Electrical Engineering** 2019-now  
*Ming Hsieh Department of Electrical and Computer Engineering, University of Southern California; GPA:4.0/4.0*

### RESEARCH EXPERIENCE

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**Activity Recognition in Wearable ECG Monitoring** 2017  
*Institute of Microelectronics, Tsinghua University*

- Collected three-axis accelerometer data through a wearable Electrocardiography (ECG) device.
- Automated human activity classification process through decision tree model to be applied to motion artifact removal in ECG signal.

**Bowel Sound Detection** 2018  
*Institute of Microelectronics, Tsinghua University*

- Collected bowel sound through a wireless recording device and a blue tooth gateway
- MFCC feature extracted from audio pieces for LSTM training
- Achieved the state of the art detection accuracy

**Image Morphing for Distributed Learning** 2018  
*ECE, Duke University*

- Morph training image for private learning task
- Proved privacy of the method

**POSH: Circuit Modeling and Automatic Sizing** 2019-now  
*EE, USC*

- AMPSE: Analog mixed signal parameter search engine
- BOAS: Bayesian optimization aided sampling for efficient circuit modeling
- Transfer learning of circuit regression models between different technology nodes. Improve the modeling efficiency.
- CEPA: CNN-based early performance assertion scheme for AMS circuits

## High Speed Time-Based ADC Design

2020-now

*EE, USC*

- 5GS/s 8 bit single channel ADC in 12nm FinFet CMOS
- 40GS/S 8 bit TI Time-Based ADC in 12nm FinFet CMOS
- 100GS/S 8 bit TI Time-Based ADC in 12nm FinFet CMOS
- 20GS/S 10 bit TI Time-Based ADC in 4nm FinFet CMOS

## **PUBLICATIONS**

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**A 10GS/s 8bit 2850 $\mu$ m<sup>2</sup> Two-Step Time-Domain ADC With Speed and Efficiency Enhanced by the Delay-Tracking Pipelined-SAR TDC**

*Juzheng Liu, Mohsen Hassanpourghadi, and Mike Shuo-Wei Chen, 2022, IEEE Journal of Solid State Circuits (JSSC)*

**A 10GS/s 8b 25fJ/c-s 2850 $\mu$ m<sup>2</sup> Two-Step Time-domain ADC Using Delay-Tracking Pipelined-SAR TDC with 500fs Time Step in 14nm CMOS Technology**

*Juzheng Liu, Mohsen Hassanpourghadi, and Mike Shuo-Wei Chen, 2022, IEEE ISSCC*

**Analog/Mixed-Signal Circuit Synthesis Enabled by the Advancements of Circuit Architectures and Machine Learning Algorithms**

*Shiyu Su, Qiaochu Zhang, Mohsen Hassanpourghadi, Juzheng Liu, Rezwan A Rasul, and Mike Shuo-Wei Chen, 2022 Asia and South Pacific Design Automation Conference (ASP-DAC), 2022(to appear)*

**Design Automation of Analog Mixed-Signal FIR Filters Using Time Approximation Architecture**

*Shiyu Su, Qiaochu Zhang, Juzheng Liu, Mohsen Hassanpourghadi, Rezwan Rasul, Mike Chen, 2022 Asia and South Pacific Design Automation Conference (ASP-DAC), 2022(to appear)*

**From Specification to Silicon: Towards Analog/Mixed-Signal Design Automation using Surrogate NN Models with Transfer Learning**

*Juzheng Liu, et al, 2021, IEEE/ACM ICCAD*

### **Circuit Connectivity Inspired Neural Network for Analog Mixed-Signal Functional Modeling**

*M. Hassanpourghadi, S. Su, R.A. Rasul, **J. Liu**, Q. Zhang, and M. S.-W. Chen, 2021 58th ACM/EDAC/IEEE Design Automation Conference (DAC), Dec. 2021.*

### **CEPA: CNN-based Early Performance Assertion Scheme for Analog and Mixed-Signal Circuit Simulation**

*Q. Zhang, S. Su, **J. Liu** and M. S.-W. Chen, 2020 IEEE/ACM International Conference on Computer-Aided Design (ICCAD), November 2020.*

### **Transfer Learning with Bayesian Optimization-Aided Sampling for Efficient AMS Circuit Modeling**

***J. Liu**, M. Hassanpourghadi, Q. Zhang, S. Su and M.S.-W. Chen, 2020 IEEE/ACM International Conference on Computer-Aided Design (ICCAD), November 2020.*

### **Bowel sound recognition using SVM classification in a wearable health monitoring system**

*Yin, Yue; Jiang, Hanjun; Feng, Shulin; **Liu, Juzheng**; Chen, Ping; Zhu, Binjie; Wang, Zhihua. *Sci China Inf Sci*, 2018, 61: 084301*

### **Bowel Sound Detection Based on MFCC Feature and LSTM Neural Network**

***Juzheng Liu**, Yue Yin, Hanjun Jiang, Huili Kan, Zongwang Zhang, Ping Chen, Binjie Zhu, Zhihua Wang. *IEEE Biomedical Circuits and Systems (BioCAS)*, 2018*

### **Activity Recognition in Wearable ECG Monitoring Aided by Accelerometer Data**

***Juzheng Liu**, Jing Chen, Hanjun Jiang, Wen Jia, Qingliang Lin, Zhihua Wang. *IEEE International Symposium on Circuits and Systems (ISCAS)*, 2018*

## **AWARDS**

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**3rd Place of Low-Power Image Recognition Challenge(LPIRC)** 2018  
*IEEE Rebooting Computing*

**Summer Internship Scholarship** 2018  
*Department of Physics, Tsinghua University*

**First Prize of Province, Chinese Physics Olympiad(CPhO)** 2014  
*Chinese Physical Society*