

## REZWAN A RASUL

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### RESEARCH TOPIC

Energy-efficient implementation of machine-learning algorithm using application specific IC

### EDUCATION

PhD in Electrical Engineering August 2016 - Now  
CGPA: 3.76/4.00  
University of Southern California, CA, USA

ME in Physical Electronics April 2014 – March 2016  
CGPA: 2.87/3.00  
Tokyo Institute of Technology, Tokyo, Japan

BE in Electrical and Electronics Engineering April 2010 – March 2014  
CGPA: 2.91/3.00 (ranked 2<sup>nd</sup> in a class of 100)  
Tokyo Institute of Technology, Tokyo, Japan

### RESEARCH EXPERIENCE

#### 1. Article:

- i. M Hassanpourghadi, R. A. Rasul, MSW Chen, "A Module-Linking Graph Assisted Hybrid Optimization Framework for Custom Analog and Mixed-Signal Circuit Parameter Synthesis," ACM Trans. Des. Autom. Electron. Syst. 26, 5, Article 38 (June 2021), 22 pages.

#### 2. Conference paper:

- i. R. A. Rasul, MSW Chen, "A 128×128 SRAM Macro with Embedded Matrix-Vector Multiplication Exploiting Passive Gain via MOS Capacitor for Machine Learning Application," IEEE Custom Integrated Circuits Conference (CICC), Apr. 2021.
- ii. R. A. Rasul, P. Teimouri and M. S.-W. Chen, "A time multiplexed network architecture for large-scale neuromorphic computing," 2017 IEEE 60th International Midwest Symposium on Circuits and Systems (MWSCAS), Boston, MA, 2017, pp. 1216-1219.
- iii. M. Hassanpourghadi, S. Su, R. A. Rasul, J. Liu, Q. Zhang, and M. S.-W. Chen, "Circuit Connectivity Inspired Neural Network for Analog Mixed-Signal Functional Modeling," 2021 58th ACM/EDAC/IEEE Design Automation Conference (DAC), Dec. 2021 (to appear)
- iv. J. Liu et. al. "'From Specification to Silicon: Towards Analog/Mixed-Signal Design Automation using Surrogate NN Models with Transfer Learning" ICCAD 2021.
- v. S. Su, Q. Zhang, J. Liu, M. Hassanpourghadi, R.A. Rasul, and Mike Chen, "TAFA: Design Automation of Analog Mixed-Signal FIR Filters Using Time Approximation Architecture," in 2022 27th ASP-DAC, Jan. 2022. (to appear)



- 2) Sony Corporation Summer 2012  
Measured and compared performance of camera antennas in various frequency regions
- **Teaching and Mentoring:**
    - 1) Mentor of the SHINE program at University of Southern California Summer 2020  
Guided a high school senior to train and test quantized neural network.
    - 2) TA of EE 348L at University of Southern California Fall 2018  
Graded homework and instructed PCB design labs
    - 3) TA of SAR ADC training session, organized by Matsuzawa and Okada Lab March 2015  
Assisted participants to setup testbench and perform ADC simulation using LTSpice
    - 4) TA of EEE laboratory 3 (junior years undergraduate course) Autumn 2014  
Explained theory, assisted in VHDL coding, set up FPGA for distance measurement
    - 5) TA of Global Scientists and Engineering Course Autumn 2014
    - 6) Tutor of YSEP exchange student at Matsuzawa and Okada Lab Autumn 2014  
Assisted in MATLAB simulation of PLL

## **TECHNICAL SKILLS**

- Simulations Tools: Cadence (Virtuoso Schematic Editor, Layout Editor, Analog Design Environment, Spectre Circuit Simulator), MATLAB, LTspice, PSpice, Verilog-A
- Programming: Python, C/C++, Java, Unix

## **CERTIFICATION**

- JLPT (Japanese Language Proficiency Test): Level N1