

RUICONG(RAY) CHEN

PhD Candidate of EECS@MIT

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<https://ruicong-chen.github.io/>

SUMMARY

- I have excellence in analog/mixed-signal chip design with proved record of leading publications such as **VLSI-C 2022**.
- I have experience in complex system design with top publication such as **MobiCOM 2020**.
- I am co-advised by Prof. **Anantha Chandrakasan** and Prof. **Hae-Seung Lee**.

EDUCATION

- Ph.D., Department of Electrical Engineering and Computer Science (EECS), **MIT** *2021-Present, Cambridge, MA*
 - Advisors: Anantha P. Chandrakasan and Hae-Seung Lee
 - CommLab Fellowship
- S.M., Department of EECS, **MIT** *2019-2021, Cambridge, MA*
 - Advisors: Anantha P. Chandrakasan and Hae-Seung Lee
 - GPA:5.0
- B.S., Department of EECS, **Peking University** *2015-2019, Beijing, China*
 - Ranking the 1st in the department
 - National Scholarship (1%)

RESEARCH INTERESTS

- **Mixed-signal Application-Specific Integrated Circuit (ASIC) Design**
- Hardware security
- In-memory computing and machine learning

MAIN RESEARCH EXPERIENCE

- Circuit design for secure IoT applications *July 2021-Present, MIT*
 - Design, simulate, fabricate and test ADCs with side-channel attack resistance
 - Improve the circuit performance by 12.5 times with random switching
 - **One work submitted to ISSCC**
 - **One work published on top venue of circuits, VLSI-C**
- Direct hybrid-encoding for signed expressions (HESE) SAR for neuromorphic computing *Apr 2020-June 2021, MIT*
 - Implemented energy-efficient HESE-direct SAR ADC
 - Increased the sparsity by 50% with direct sparsity encoding
 - **Work published on ISLPED**
- Wireless and Batteryless Micro-Implants *Sept 2019-Mar 2020, MIT*
 - Designed, simulated, fabricated, and tested the system with costume designed IC on flexible PCB
 - **Work published on top venue of networking, MobiCOM**

FEATURED PUBLICATIONS

RaM-SAR: A Low Energy and Area Overhead, 11.3fJ/conv.-step 12b 25MS/s Secure Random-Mapping SAR ADC with Power and EM Side-channel Attack Resilience, The 2022 International Symposium on VLSI Circuits (**VLSI-C 2022**)

R.-C Chen, H.-R Wang, A. Chandrakasan, H.-S Lee

A Bit-level Sparsity-aware SAR ADC with Direct Hybrid Encoding for Signed Expressions for AIoT Applications, The 2022 International Symposium on Low Power Electronics and Design (**ISLPED 2022**)

R.-C Chen, H. T. Kung, A. Chandrakasan, H.-S Lee

Enabling Self-Reconfigurability for Wireless and Batteryless Micro-Implant, The 26th Annual International Conference on Mobile Computing and Networking (**MobiCOM 2020**)

M.-R, Abdelhamid, **R.-C Chen**, J.-Y Chou, A. Chandrakasan, F. Adib

SELECTED AWARDS

- Outstanding Graduate in Beijing 2019 *by Beijing Municipal Commission of Education*
- Outstanding Graduate of Peking University 2019 *by Peking University*
- 1st Prize, 33th National Physics Competition of Undergrad 2016 *by Beijing Municipal Commission of Education*

SERVICE

- Reviewers of TVLSI, T-CAS I and T-CAS II *Current*

TECHNICAL SKILLS

Programming Skills

Python (Pytorch), MATLAB, C/C++

Hardware Skills

Verilog, Cadence (Virtuoso, Innovus and Genus), HFSS, SPICE, Eagle, SolidWorks