

Research Review

Center for Integrated Circuits and Systems
Microsystems Technology Laboratories
Massachusetts Institute of Technology
May 5, 2021

Center for Integrated Circuits and Systems

<http://www-mtl.mit.edu/research/cics/>
<http://www-mtl.mit.edu/wpmu/annualreport/?cat=26>

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CICS Faculty



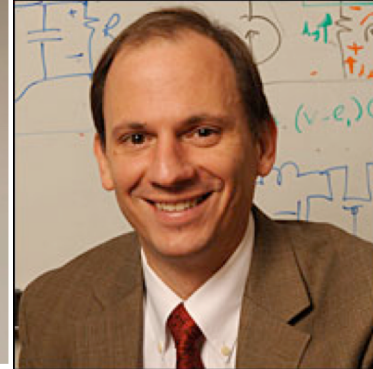
**Harry Lee,
Director**



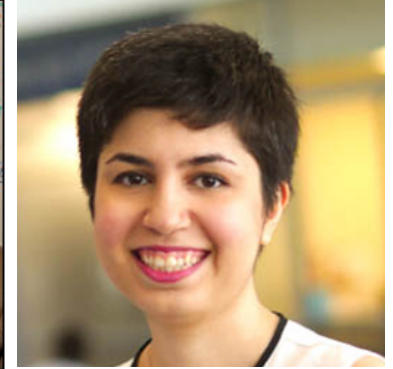
**Anantha
Chandrakasan**



Ruonan Han



David Perreault



**Negar
Reiskarimian**



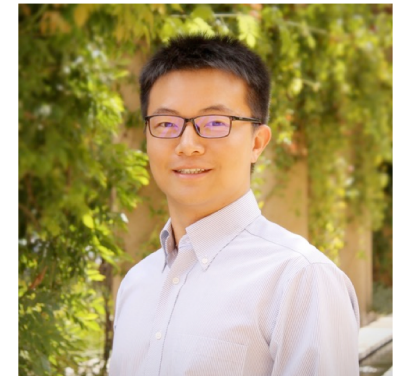
Max Shulaker



Charlie Sodini



Vivienne Sze



Song Han

CICS Review May 5, 2021

10:45 AM	Prof. Harry Lee	Welcoming Remarks
10:55 AM	Prof. Vivienne Sze	Research Overview
11:05 AM	Soumya Sudhakar	Balancing Actuation and Computing Energy in Motion Planning
11:35 AM	Prof. Ruonan Han	Research Overview
11:45 AM	Muhammad Ibrahim Wasiq Khan	A 0.31 THz CMOS Array Enabling Generation and Detection of Waves with Orbital-Angular Momentum
12:05 PM	Mina Kim	A Dual-Loop Sub-THz Molecular Clock with 20 ppt Long-Term Stability Using Simultaneous Fundamental and High-Order Spectroscopic Detection
12:25 PM		Break
12:55 PM	Prof. Anantha Chandrakasan	Research Overview
1:05 PM	Mohamed abdelhamid	Wireless and Batteryless Self-reconfigurable in-Body Microimplants
1:25 PM	Vipasha Mittal	Thermal Noise-Based Temperature Sensor
1:45 PM	Prof. Harry Lee	Research Overview
1:55 PM	Rishabh Mittal	Jitter Tolerant Pipeline ADC

CICS Review May 5, 2021, Cont'd

2:25 PM	Prof. Max Shulaker	Research Overview
2:35 PM	Tathagata Srimani	Beyond-Silicon Technologies for Beyond-Silicon Applications
3:05 PM		Break
3:20 PM	Prof. Song Han	Putting AI on a Diet: TinyML and Efficient Deep Learning
3:30 PM	Han Cai	Efficient Neural Architecture Search and Tiny Transfer Learning
4:00 PM	Prof. Negar Reiskarimian	Research Overview
4:10 PM	Soroush Araei	Leveraging Block Digital Filtering to enable Fully-Passive Analog/RF FIR filters
4:40 PM	Prof. David Perreault	Research Overview
4:50 PM	Mike Ranjram	A Miniaturized Data Center Power Supply Using a Split-Phase, Fractional Turn Transformer
5:20 PM	Prof. Charlie Sodini	Research Overview
5:30 PM	Dr. Anand Chandrasekhar/Hanrui Wang	Algorithms for Continuous Absolute Blood Pressure Monitoring
6:00 PM		Adjourn

Charter of CICS

- **Created in Nov. 1998 to promote closer technical relation between MIT's circuits & systems research and industry.**
- **Initiate and fund new research in integrated circuits and systems.**
- **Produce more students skilled in the same area.**
- **Address important research issues relevant to industry.**
- **Solicit ideas for new research from industry.**

CICS Membership

- **CICS membership fee paid as unrestricted fund (50k/yr)**
- **CICS supports broad research *areas* rather than a research *topic*.**
- **Specific interests in research topics can be handled by a separate research contract with individual faculty**

CICS Membership Benefits

- **Access to all research conducted by participating faculty**
- **Research reviews**
- **All-day reviews in early May and early November each year**
- **Research in all stages from concepts to completion are presented**
- **Attendees get familiarized with CICS faculty & students as well as network with other industrial participants**
- **Close technical interaction**
- **Possibility of future collaborative research and/or research contracts**

CICS Membership Benefits (II)

- **CICS research abstracts**
- **Access to CICS student resume**
- **Access to CICS website**
- **CICS assists organizing meetings with graduate students on or around research reviews upon request**
- **CICS assists organizing meetings in Bay Area with graduate students traveling to the West Coast in February each year upon request**