

Theses Awarded

S.B.

- **Lisa Kong** (J. A. DEL ALAMO)
High-resolution Transmission Electron Microscopy of III-V FinFETs
- **James Mawdsley** (R. HAN)
Low-Noise Frequency Synthesizer for a Sub-mm-Wave Carbonyl Sulphide Molecule Clock
- **Diana Wolk** (V. SZE)
Energy-Efficient Deep Neural Network for Depth Prediction

S.M.

- **Navid Abedzadeh** (K. K. BERGGREN)
Diffractive Electron Mirror for use in Quantum Electron Microscopy
- **Haluk Akay** (S.-G. KIM)
Low-Frequency Vibrational Energy Harvesting at the Micro and Meso Scale
- **Ashley Beckwith** (L.F. VELÁSQUEZ-GARCÍA)
Additive Manufacturing of Microfluidics for Evaluation of Immunotherapy Efficacy
- **Eric Bersin** (D. R. ENGLUND)
Super-resolution Localization and Readout of Individual Solid-state Qubits
- **Pedro Colon-Hernandez** (V. M. BOVE, JR.)
Hover: A Wearable Object Identification System for Audio Augmented Reality Interactions
- **Erik Eisenach** (D. R. ENGLUND AND D. A. BRAJE)
Tunable and Broadband Loop Gap Resonator For Coherent Control Of Nitrogen Vacancy Centers In Diamond
- **Nathan Fritz** (B. L. WARDLE)
Micro Computed Tomography for Interlaminar Analysis, Void Quantification, and Feature Localization in Carbon Fiber Composites
- **Cornwell Hayden** (B. L. WARDLE)
Tensile and Interfacial Properties of Radially Aligned CNT Grown Carbon Fibers
- **Taehoon Jeong** (A. P. CHANDRAKASAN AND H.-S. LEE)
A Pipelined Analog-to-Digital Converter with Low-gain, Low-bandwidth Op-Amps
- **Yosef Kornbluth** (L. F. VELÁSQUEZ-GARCÍA)
Focused Atmospheric-pressure Microsputterer for Additive Manufacturing of Microelectronics Interconnects

- **Dale Lidston** (B. L. WARDLE)
Synthesis, Characterization, and Mode I Fracture Toughness of Aligned Carbon Nanotube Polymer Matrix Nanocomposites
- **Andrew MacInnes** (V. M. BOVE, JR.)
Minimization of Aberrations for the Mark IV Holographic Architecture using Optical Software Modelinglang@mit.edu
- **Boying Meng** (J. VOLDMAN)
Reconfigurable Neural Probe for Chronic Recording
- **Sidney Primas** (C. G. SODINI)
The AutoScope: An Automated, Low-Cost Urinalysis System for the Point-of-Care
- **Mihika Prabhu** (D. R. ENGLUND)
Towards Optimal Capacity-achieving Transceivers with Photonic Integrated Circuits
- **Ali Shtarbanov** (V. M. BOVE, JR.)
AirTap: A Multimodal Interactive Interface Platform with Free-space Cutaneous Haptic Feedback via Toroidal Air-vortices
- **Tathaga Srimani** (A. P. CHANDRAKASAN)
Energy Efficient Computing: From Nanotubes To Negative Capacitance
- **Zhumei Sun** (L. F. VELÁSQUEZ-GARCÍA)
Exploration of Metal 3-D Printing Technologies for the Microfabrication of Freeform, Finely Featured, Mesoscaled Structures
- **Richard Swartwout** (V. BULOVIĆ)
Smoothing Silver Nanowires for Optoelectronic Applications
- **Emily Toomey** (K. K. BERGGREN)
Microwave Response of Nonlinear Oscillations in Resistively Shunted Sup6J556erconducting Nanowires
- **Miaorong Wang** (A. P. CHANDRAKASAN)
Algorithms and Low-Power Hardware for Keyword Spotting Applications
- **Tien-Ju Yang** (V. SZE)
Neural Network Simplification Using A Progressive Barrier Based Approach”

M.ENG.

- **Skanda Koppula** (A. P. CHANDRAKASAN)
Energy-Efficient Speaker Identification with Low-Precision Networks
- **Germain Martinez** (D. S. BONING)
Methods for Compact Modeling of Process Variations in Silicon Photonics Devices

M.ENG. (CONTINUED)

- **Daniel Moon** (D. S. BONING)
Modeling Silicon Photonics Process Variations using Ring Resonator Devices
- **Valerie Sarge** (V. SZE)
Evaluating Simulink HDL Coder as a Framework for Flexible and Modular Hardware Description
- **Emily Van Belleghem** (V. M. BOVE, JR.)
3-Dimensional Autostereoscopic Displays with 4K Televisions

PH.D.

- **Omid Abari** (A. P. CHANDRAKASAN AND D. KATABI)
Software-hardware Systems for the Internet of Things
- **Avishek Biswas** (A. P. CHANDRAKASAN)
Energy-Efficient "Smart" Embedded Memory Design in the Era of IoT and AI
- **Yumeng Cao** (V. BULOVIĆ)
Photostabilization Of J-Aggregate Cyanine Dyes For Exciton-Polariton Based Devices
- **Yu-Hsin Chen** (V. SZE)
Architecture Design for Highly Flexible and Energy-efficient Deep Neural Network Accelerators
- **Nigel Chou** (S. M. MANALIS)
Measuring Mass Changes in Single Suspended and Adherent Cells with Applications to Personalized Medicine in Glioblastoma Multiforme (GBM)
- **Maggie Delano** (C. G. SODINI)
A Portable Bioimpedance Spectroscopy System for Congestive Heart Failure Management
- **Chris Heidelberg** (E. A. FITZGERALD)
GaAsP/InGaP Heterojunction Bipolar Transistors for III-V on Si Microelectronics
- **Olivia Hentz** (S. GRADEČAK)
The Uncommon Nature of Point Defects in Organic-Inorganic Perovskite Solar Cells
- **Chiraag Juvekar** (A. P. CHANDRAKASAN)
Hardware and Protocols for Authentication and Secure Computation
- **Yoonkyung Lee** (N. X. FANG)
Optimal Wavefronts and Subwavelength Structures: Computer-aided Design for Optics and Acoustics
- **Wenjie Lu** (J.A. DEL ALAMO)
Antimonide-based III-V Multigate Transistors
- **Charles Mackin** (T. PALACIOS)
Graphene Chemical and Biological Sensors: Modeling, Systems, and Applications

- **E. Salil Magden** (M. R. WATTS AND L. A. KOLODZIEJSKI)
Optical Signal Generation, Stabilization, and Manipulation in Broadband Silicon Photonics
- **Brian Joseph Modtland** (M. A. BALDO AND J. KONG)
Exploring Valleytronics in 2-D Transition Metal Dichalcogenides
- **Farnaz Niroui** (V. BULOVIĆ)
Engineering at the Limits of the Nanoscale
- **Mihir Pant** (D. R. ENGLUND)
Architectures for Photon-mediated Quantum Information Processing
- **Alex Patterson** (A. I. AKINWANDE)
Theory and Modeling of Field Electron Emission from Low-dimensional Electron Systems
- **Daniel Piedra** (T. PALACIOS)
Design-space and Scalable Technology for GaN Based Power Transistors
- **Edwina Portocarrero Navarro** (V. M. BOVE, JR.)
Networked Playscapes: Redefining the Playground
- **Priyanka Raina** (A. P. CHANDRAKASAN)
Energy-efficient Circuits and Systems for Computational Imaging and Vision on Mobile Devices
- **Andy Shih** (A. I. AKINWANDE)
Flexible and Solution-Processed Organic Thin Film Transistors for High Voltage Applications
- **Ren-Jye Shiue** (D. R. ENGLUND)
Heterogeneous Integration of Two-Dimensional Materials for On-chip Optical Interconnects
- **Katia Shtyrkova** (E. P. IPPEN)
Fully Integrated CMOS-compatible Mode-locked Lasers
- **Amr Suleiman** (V. SZE)
Energy-efficient Accelerators for Miniaturized Robots Autonomous Navigation
- **Mehul Tikekar** (A. P. CHANDRAKASAN AND V. SZE)
Energy-efficient Video Decoding using Data Statistics
- **Matthew Trusheim** (D. R. ENGLUND)
Nanoscale Engineering of Spin-based Quantum Devices in Diamond
- **Tony Wu** (M. A. BALDO)
Development in Utilizing Singlet Fission and Triplet-Triplet Annihilation to improve Solar Cell Efficiency
- **Ruize Xu** (S.-G. KIM)
Low-frequency, Low-amplitude MEMS Vibration Energy Harvesting