Theses Awarded

S.B.
- Brian A. Mills (C. Thompson)
  Stress Evolution of RuO$_2$ Li-ion Thin Film Battery Electrodes (Tentative)

S.M.
- Aya Amer (A. Chandrakasan)
  SHARC: Self-healing Analog with RRAM and CNFETs
- Kwabena Arthur (G. Barbastathis)
  On the Use of Prior Knowledge in Deep Learning Algorithms
- Alex Barksdale (J. Han)
  Lithium Extraction from Brines Using Ion Concentration Polarization
- Alan Casallas (J. Lang)
  Contactless Voltage and Current Estimation Using Signal Processing and Machine Learning
- Jeffery Bowen Chu (N. Fang)
  Investigating the Feasibility and Impact of Integrating Wire-arc Additive Manufacturing in Aerospace Tooling Applications
- Huifeng Du (N. Fang)
  Finite Element Analysis of Adhesive Contact Interface in Continuous 3D Printing
- Mingye Gao (V. Bulovic)
  Application of Graphene in Designing Tunneling Nanoelectromechanical Switches
- Justin Hou (L. Liu)
  Strong Coupling between Microwave Photons and Nanomagnet Magnons
- Muhammad I. Ibrahim (R. Han)
  Chip-scale Ambient Quantum Magnetometry via CMOS Integration with Diamond Color Centers
- Iksung Kang (G. Barbastathis)
  High-fidelity Inversion at Low-photon Counts Using Deep Learning and Random Phase Modulation
- Muhammad I. Khan (R. Han)
  THzID: A 1.6mm2 Package-less Identification Tag with Backscattering and Beam-steering at 260GHz
- Peter Li (V. Sze)
  High-throughput Computation of Shannon Mutual Information on Chip
- Yujun Lin (S. Han)
  Mixed-precision NN Accelerator with Neural-hardware Architecture Search
- Zhijian Liu (S. Han)
  Hardware-efficient Deep Learning for 3D Point Cloud
- Saurav Maji (A. Chandrakasan)
  Energy-efficient protocol and hardware for security of implantable devices
- Alberto Nardi (K. Berggren)
  Novel Field Emission Devices for Vacuum Nanoelectronics and Optoelectronic Applications
- Nicolo Pettrini (K. Berggren)
  Effect of Thermal Conductance on the Performance of Superconducting Nanowires Single Photon Detectors (SNSPDs)
- Joshua Perozek (T. Palacios)
  Vertical Gallium Nitride Fin Transistors for RF Applications
- Bidusha Poudyal (D. Boning)
  Predictive Analysis of Installation and Operational Qualification Issues vs. Process Severity Events
- Gokul Prasath Rajamanickam (N. Fang)
  A Multispectral Imaging Method and Device to Detect and Quantify the Presence of Fluid in the Middle Ear to Facilitate the Diagnosis and Triage of Ear Infections
- Taqiyah Safi (L. Liu)
  Tunable Spin-charge Conversion Across the Metal-insulator Transition in Vanadium Dioxide
- Soumya Sudhakar (V. Sze)
  Balancing Actuation and Computing Energy in Low-power Motion Planning
- Hanrul Wang (S. Han)
  Efficient Algorithms and Hardware for Natural Language Processing
- Zoe Wolsson (D. Boning)
  Improving Predictability of Cell Culture Processes During Biologics Manufacturing Scale-up through Hybrid Modeling
- Yannan Nellie Wu (V. Sze)
  A Systematic Approach for Architecture-level Energy Estimation of Accelerator Designs
- Qingyun Xie (T. Palacios)
  Gallium Nitride Electronics for Cryogenic and High Frequency Applications
- Mantian Xue (T. Palacios)
  Chemical and Biomedical Sensors Using Two Dimensional Materials
- Mengyang Yuan (T. Palacios)
  GaN Electronics for High-temperature Applications
- Ryan Zimmerman (V. Bulovic)
  Fabrication of Singulated c-Si Solar Cells for Semi-flexible Photovoltaic Modules
M. ENG.

- David Amirault (D. Boning)
  Partition WaveNet for Deep Modeling of Automated Material Handling System Traffic

- Daibo Chen (J. Lang)
  RF Energy Harvesting Using Carbon Nanotube Components

- Alan Cheng (V. Sze)
  Low Power Time-of-flight Imaging for Augmented Reality

- Lauren Clayberg (T. Palacios)
  Web Element Role Prediction From Visual Information Using A Novel Dataset

- Qiang Cui (T. Palacios)
  Use of Machine Learning in Radio Frequency Integrated Circuits (RFIC) Development

- Driss Hafdi (S. Han)
  Mixed-precision Architecture for Flexible Neural Network Accelerators

- Theia Henderson (V. Sze)
  A Continuous Approach to Information-theoretic Exploration with Range Sensors

- Nicholas Klugman (J. Lang)
  Modeling and Design of Magnetic Flux Compression Generators

- Danielius Kramnik (R. Ram)
  Scaling Trapped-ion Quantum Computers with CMOS-Integrated State Readout

- Elizabeth Lee (L. Daniel)
  Sensitivity Validation of a Coaxial Probe for a Multilayer Tissue Model, Using Simulation and Phantom Measurements

- Ayrton Munoz (T. Palacios)
  Development of Vertical Bulk Gallium Nitride Power Devices

- Allan Sadun (L. Daniel)
  Robust Design Algorithms for Silicon Photonics

- Diana Wofk (V. Sze)
  Fast and Energy-efficient Monocular Depth Estimation on Embedded Systems

PH.D.

- Odin Brautigam Achorn (M. Bawendi)
  Red-emitting Quantum Dots for Luminescent Solar Concentrators and Displays

- Akshay Agarwal (K. Berggren)
  Techniques for Enhancing Electron Microscopy

- Nicha Apichitsopha (J. Voldman)
  Large-area Cell-tracking Cytometry for Biophysical Measurements of Single Cells

- Murarka Apoorva (J. Lang)
  Nanoscale Membranes for Electromechanical Systems

- Xiaowei Cai (J. A. Del Alamo)
  InGaAs MOSFETs for Logic and RF Applications: Reliability, Scalability and Transport

- Sam Chevalier (L. Daniel)
  Observability Framework for Electrical Power Distribution Networks

- Andrew Dane (K. Berggren)
  Superconducting Photodetectors, Nanowires and Resonators

- Mo Deng (G. Barbastathis)
  Deep Learning with Physical and Power-spectral Priors for Robust Image Inversion

- Paul Gabrys (R. Macfarlane)
  Controlling Structure Across Length Scales with Directed Assembly of Colloidal Nanoparticles

- Preet Garcha (A. Chandrakasan)
  Low Power Circuits with Integrated Magnetics for Sensors and Energy Harvesting Systems

- Henri-Louis Girard (K. Varanasi)
  Interactions at Interfaces Across Scales: from Adsorption to Adhesion

- Parker Gould (M. Schmidt)
  An Ultra-low Cost Inductively-coupled Plasma Chemical Vapor Deposition Tool for Micro- and Nanofabrication

- Bashar Hamza (S. Manalis)
  An Optofluidic Platform for Longitudinal Circulating Tumor Cell Studies in Mouse Models of Cancer

- Eric Calvin Hansen (M. Bawendi)
  Low-toxicity, Earth-abundant Nanomaterials for Photoluminescence or Magnetic Resonance

- Marek Hempel (T. Palacios)
  Applications and Technology of 2D Materials for Micro- and Macroscale Electronics

- Marek Hempel (J. Kong)
  Technology and Applications of 2D Materials in Micro- and Macroscale Electronics

- Mitchell Hsing (M. Schmidt)
  Design, Fabrication, and Characterization of a Compact Magnetron Sputtering System for Micro/Nano Fabrication

- Zhi Hu (R. Han)
  Large-scale Dense On-chip Terahertz Radiator and Receiver Arrays

- Taehoon Jeong (H.-S. Lee)
  Secure Analog-to-digital Conversion against Power Side-channel Attack
PH.D. (continued)

- Jian-An (Jake) Ke (J. KONG)
  Guided Etching and Deposition of Transition Metal Dichalcogenides

- Sami Khan (K. VARANASI)
  Towards Impacting Electrochemical Phenomena Using Interfacial Engineering

- Yunjo Kim (J. KIM)
  Interface engineering for exfoliation and integration of heteroepitaxial III-V films

- Derek Kita (J. HU)
  Integrated Photonic Devices for Spectroscopic Chemical Detection

- Rakesh Kumar (J. LANG)
  Lifetime Battery Cycle Data for Extreme Operating Conditions

- Duanhui Li (J. HU)
  Micro Optics for Micro Hybrid Concentrator Photovoltaics

- Yuxuan Lin (T. PALACIOS)
  Infrared Detectors Based on Two-dimensional Materials and Heterostructures

- Thomas Mahony (V. BULOVIC)
  A Hybrid Approach Towards On-chip Visible Lasers

- Samantha Ann McBride (K. VARANASI)
  Controlling Crystallization via Interfacial Engineering: Patterning, Fouling-inhibition, and Nutrient Recovery

- Jinghui Miao (C. THOMPSON)
  Lithiation-induced Phase Transitions in Alloying Anodes for Thin Film Lithium-ion Batteries

- Nicole Susanne Moody (M. BAWENDI)
  Assessing and Improving the Regulatory Compliance and End-of-life Environmental Impacts of Lead-based Thin-film Photovoltaics

- James Noraky (V. SZE)
  Algorithms and Systems for Low Power Time-of-flight Imaging

- Wei Ouyang (J. HAN)
  Hierarchical Selective Electrokinetic Concentration: the Universal Next-generation Biomolecule Enrichment Technique for Molecular Diagnostics

- Peter Santos (R. MACFARLANE)
  Self-assembling Nanocomposite Tectons for Ordered Superlattices

- Jose Serralles (L. DANIEL)
  Inverse Problems and Robust Design Optimization Techniques for Magnetic Resonance Imagers

- Katherine Emily Shulenberger (M. BAWENDI)
  Confinement Effects on Multie exciton Dynamics in Semiconductor Nanocrystals

- Timothy Scott Sinclair (M. BAWENDI)
  Photophysics of Excitation Collection

- Max Stockslager (S. MANALIS)
  Single-cell Mass Measurements for Drug Susceptibility Testing in Cancer

- Elise Strobach (E. WANG)
  Optically Transparent, Thermally Insulating and Soundproofing (OTTIS) Aerogel for High-efficiency Window Applications

- Peter Su (A. AGARWAL)
  Lead Chalcogenide Thin Film Materials and Processing for Infrared Optical Devices

- Cong Su (J. KONG)

- Scott Tan (J. KIM)
  Neuromorphic Computing Systems

- Carson Teale (M. SCHMIDT)
  In-situ Depth Monitoring for a Deep Reactive Ion Etcher Using a White Light Interferometer

- Emily Toomey (K. BERGGREN)
  Superconducting Nanowire Electronics for Alternative Computing

- Cheng Wang (R. HAN)
  Terahertz Wave-molecule Interactions via CMOS Chips: From Comb Gas Sensor with Absolute Specificity to Ultra-stable, Miniaturized Clock

- Tsui-Wei (Lily) Weng (L. DANIEL)
  Evaluating Robustness of Deep Neural Networks (tentative)

- Dan Wu (J. VOLDMAN)
  Microfluidic and Electronic Detection of Protein Biomarkers

- Yujia Yang (K. BERGGREN)
  Nanostructures for Vacuum Optoelectronic Engineering

- Yang Yang (Q. HU)
  Terahertz Laser Frequency Combs: Devices and Applications

- Jason Jungwan Yoo (M. BAWENDI)
  Developing Highly Efficient Lead Halide Perovskite Solar Cells

- Di Zhu (K. BERGGREN)
  Microwave Engineering in Superconducting Nanowires for Single-photon Detection