2016 Dissertation Titles

- Novel Nanomaterials for Electronic and Sensing Applications
- Orbital Angular Momentum Based Spatially Multiplexed Optical and Millimeter-wave Communication
- Active and Passive Microwave Remote Sensing Synergy for Geophysical Parameter Estimation
- Optimizing Emission in III-Nitride Nanophotonic Arrays and Single Photon Sources
- Correction, Coregistration and Connectivity Analysis of Multi-contrast Brain MRI
- Designable Nonlinear Power Shaping Photonic Surfaces
- Computational Analysis of Interaction Behavior: Translation for Assessment and Intervention in Autism Spectrum Disorder (ASD)
- Knowledge-driven Representations of Physiological Signals: Developing Measurable Indices of Non-observable Behavior
- Large-scale Scene Classification, Recognition and Retrieval Using Machine Learning Techniques
- Parallel Architectures and Algorithms for Streaming Applications
- Integrated Reconfigurable Wireless Receivers Supporting Carrier Aggregation
- Understanding Understanding the Characteristics of Internet Traffic Dynamics in Wired and Wireless Networks
- On the Theory and Applications of Structured Bilinear Inverse Problems to Sparse Blind Deconvolution, Active Target Localization, and Delay-Doppler Estimation
- In-situ Characterization of Nanoscale Opto-electronic Devices Through Optical Spectroscopy and Electron Microscopy
- Quantum Feedback Control for Measurement and Error Correction
- Computational Methods for Modeling Non-verbal Communication in Human Interaction
- Low-power, Dual Sampling Rate, Shared-architecture ADC for Implantable Biomedical Systems
- An Asynchronous Resilient Circuit Template and Automated Design Flow
- Development of Integrated Waveguide Biosensors and Portable Optical Biomaterial Analysis Systems
- Applications of Quantum Error-correcting Codes to Quantum Information Processing
- Cross-Distance/Environment Face Recognition Techniques for Video Surveillance Applications
- Formal Equivalence Checking and Logic Re-synthesis for Asynchronous VLSI Designs
- Light Management in Nanostructures: Nanowire Solar Cells and Optical Epitaxial Growth
- Multi-level and Energy-aware Resource Consolidation in a Virtualized Cloud Computing System
- Modeling Astrocyte-neural Interactions in CMOS Neuromorphic Circuits
- High Accuracy Adaptive Vibrational Control for Uncertain Systems
- Autostereoscopic 3D Display Rendering from Stereo Sequences
- Advanced Techniques for Human Action Classification and Text Localization

- Optimizing Task Assignment for Collaborative Computing over Heterogeneous Network Devices
- RGB-D Camera-based Wearable Indoor Navigation System for the Visually Impaired
- Advanced Techniques for Latent Fingerprint Enhancement and Recognition
- Theory and Algorithms for Multimodal Image Retrieval
- Opticoelectronic and Thermoelectric Properties of Two-dimensional Materials and Heterostructures
- Newsvendor Problems in Networks: Optimization Under Resource/Demand Uncertainty
- Designing, Modeling and Evaluating the Next-generation Wireless Networks
- Foundations of D2D Communication and Cache-aided Interference Management
- Efficient Yellow and Green Emitting In GaN/GaN Nanostructured QW Materials and LEDs
- A Logic Partitioning Framework and Implementation Optimizations for 3-Dimensional Integrated Circuits
- Modelling Intermittently Connected Mobile Networks
- Feature Extraction and Content-based Retrieval of 2D Shapes and 3D Mesh Models
- Unfalsified Adaptive Control with Reset and Bumpless Transfer
- Advanced Machine Learning Techniques for Video, Social, and Biomedical Data Analytics
- Intelligent Transportation Technologies in Urban Environments
- Network on Wheels: From Data Dissemination to Distributed Field Sensing
- Stochastic Optimization in High Dimensions
- A Novel Load Modeling for Voltage Stability Analysis
- Quantum Computation in Wireless Network
- Understanding Deep Learning from its System Architectures, Feature Representations to Applications
- High Capacity Optical and RF/mm-wave Communications Utilizing Orbital Angular Momentum Multiplexing
- Analysis and Modeling of Multi-level Dynamics of Multimodal Behavior in Expressive Human Communication
- Reconfigurable High Speed Optical Signal Processing For High-capacity, Spectrally Efficient Fiber Optic Systems and Networks

2015 Dissertation Titles

- Optimum Multimodal Routing Under Normal Condition and Disruptions
- Reduction in Variability in Subthreshold Analog Circuits Applied in a Nano-watt Event Detector for Seismic Sensors
- Optical and Electrical Characterization of One-dimensional (1D) and Two-dimensional (2D) Nanostructures
- One Dimensional Nanomaterials for Electronic and Sensing Applications
- Measuring Functional Connectivity of the Brain from Electrophysiological Signals
- Large-scale Temporal-causal Inference in Time Series
- All-optical Signal Processing Towards Reconfigurable Optical Networks

- Optimal Distributed Algorithms for Scheduling and Load Balancing in Wireless Networks
- In-situ Digital Power Measurement Technique Using Circuit Analysis
- Personalized Driver Assistance Systems Based on Driver/Vehicle Models
- Trustworthiness of Integrated Circuits: a New Testing Framework for Hardware Trojans
- Environmental Sound Recognition
- Nanomaterials for Macroelectronics and Energy Storage Devices
- Substrate-Induced Effects in Thermally Cycled Graphene & Electron and Thermoelectric Transports Across 2D Material Heterostructures
- Received Signal Transformation to Achieve Better Indoor Rf Localization
- Noise Benefits in Markov Chain Monte Carlo Computation
- An Information Fusion Approach to Advanced Visual Data Segmentation
- High Level Design for Yield via Redundancy in Low Yield Environments
- A New Hot-Spot Temperature Model and Methodology to Determine the Loss of Insulation Life in Distribution Transformer
- Models and Information Rates for Channels with Nonlinearity and Phase Noise
- Dendritic Computation and Plasticity in Neuromorphic Circuits
- Perceptual Video Coding and Quality Assessment
- Substrate-Induced Effects in Thermally Cycled Graphene & Electron and Thermoelectric Transports Across 2D Material Heterostructures
- Introspective Resilience for Exascale High Performance Computing Systems
- Fundamental Limits of Caching Networks: Turning Memory into Bandwidth
- Emotional Speech Generation: Data, Analysis and Model
- Intelligent Knowledge Acquisition Systems: from Descriptive to Predictive Models
- Exploiting Latent Reliability Information for Classification Tasks
- Enhancing Secrecy in Wireless Environments with Only Transmitter-side Channel State Information: Theory and Applications
- Optimizing Power Delivery Networks in VLSI Platforms
- Video Quality Database Design and Objective Assessment Methods
- Learning in Stochastic Teams and Games
- Sweep-Free Brillouin Optical Time-Domain Analyzer
- Intraocular and Extraocular Cameras for Retinal Prostheses: Effects of Foveation by Means of Visual Prosthesis Simulation
- Learning and Control in Decentralized Stochastic Systems
- High-performance Packet Processing Engines
- Advances in Linguistic Data-driven Uncertainty Modeling, Reasoning, and Intelligent Decision Making
- Data Based Modeling and Analysis of Oil Reservoir Production Data
- Silicon-base Wideband & mm-Wave Power Amplifier Architectures and Implementations
- Enabling Massive Distributed Mimo for Small Cell Networks
- Neighbor Discovery in Device-to-Device Communication
- Novel Imaging Systems for Intraocular Retinal Prostheses and Wearable Visual Aids

- Multidimensional Characterization of Propagation Channels for Next-generation Wireless and Localization Systems
- Multi-GHz Analog Frequency Synthesis in Deep Sub-µm Cmos
- Theory and Design of Magnetic Induction-Based Wireless Underground Sensor Networks
- The Smart Grid Network: Pricing, Markets and Incentives
- Metal Oxide Nanostructures for Scalable Sensing Applications
- Energy Proportional Computing for Multi-core and Many-core Servers
- Modeling Expert Assessment of Human Behavior Through Multimodal Signal Cues
- Architectures and Algorithms of Charge Management and Thermal Control for Energy Storage Systems and Mobile Devices
- Towards Efficient Fault-tolerant Quantum Computation
- Fast Flexible Dynamic Three-dimensional Magnetic Resonance Imaging

2014 Dissertation Titles

- Design and Analysis of Large Scale Antenna Systems
- Optoelectronics Using Carbon Nanotube Field Effect Transistor
- Causality and Consistency in Electrophysiological Signals
- A Computational Framework for Diversity in Ensembles of Humans and Machine Systems
- Measuring Functional Connectivity of the Brain from Electrophysiological Signals
- Control of Complex Network Systems
- Carbon Nanotube Electronics
- Optimal Redundancy Design for CMOS and Post-CMOS Technologies
- GaAs Nanosheets: Study of Stacking-fault-free Nano-structure and Its Applications on Semiconductor Devices
- Reconfigurable High-speed Optical Signal Processing and High-capacity Optical Transmitter
- A Signal Processing Approach to Robust Jet Engine Fault Detection and Diagnosis
- Hardware for Cognitive Neural Prostheses: an Ultra-low Power Approach Using Programmable Analog Integrated Circuits
- Massoud PedramSLA-based, Energy-efficient Resource Management in Cloud Computing Systems
- Aggregation and Modeling Using Computational Intelligence Techniques
- Structured Codes In Network Information Theory
- Strategic and Transitory Models of Queueing Systems
- Light-Assisted, Templated Self Assembly and Near-Field Optical Manipulation Using Photonic Crystal Slabs
- Advanced Techniques for Mocap Data Classification and Text Detection
- 3D (Stereoscopic) Image Processing via a Structured Learning System
- Pragmatic Approaches for Utilizing Space-time Encoding and Decoding
- Nanophotonic Light Management in Thin Film Silicon Photovoltaics
- Model Based PET Reconstruction and Kinetic Parameter Estimation

Electrical Engineering: Ph.D. Dissertation Topics

- Nanorod-based InGaN-GaN Core-shell NanoLEDs
- Facial Age Grouping and Estimation via Ensemble Learning
- A Learning-based Approach to Image Quality Assessment
- Average-case Performance Analysis and Optimization of Conditional Asynchronous Circuits
- Social Multimedia Computing: Efficient techniques for Annotation, Retrieval and Recommendation
- Silicon-based Wideband and mm-Wave Power Amplifier Architectures and Implementations
- Energy Aware Integrated Circuits for Communication and Biomedical Applications
- Optimizing Distributed Storage in Cloud Environments
- Photodetectors and solid-state lighting device based on III-V nanowire material systems
- Localization of Multiple Targets in Multi-path Environments
- Enhancing Speech to Speech Translation Through Exploitation of Bilingual Resources and Paralinguistic Information
- Wine Glass Mode Resonator Its Application and Study of the Its Quality Factor
- Ultrasonic Microelectromechanical Systems (MEMS) for Microfluidics, Frequency Detections and Cancer Therapeutics
- Machine Learning Based Techniques in Fully Automated Biomedical Image/Video Analysis
- A Joint Framework of Design, Control, and Applications of Energy Generation and Energy Storage Systems
- Interaction and Topology in Distributed Multi-Agent Coordination
- Optical Studies in Photonics: Terahertz Detection and Propagation in Slot Waveguides
- Growth, Fabrication and Characterization of Semiconductor Nanowire Solar Cells
- Learning in Dynamic Synapse Neural Networks
- Energy-Efficient Video-Sharing Servers
- Process Data Analytics and Monitoring Based on Causality Analysis Techniques
- Electromagnetic Energy Harvesting from Vibrations
- Towards High Performance and Energy Efficient Hardware Transactional Memory System
- Non-steady State Kalman Filter for Subspace Identification and Predictive Control
- Direct wholebody Patlak and Logan image reconstruction from listmode PET data
- Active state tracking in heterogeneous sensor networks