



SCHOOL OF ENGINEERING RESEARCH SHOWCASE 2020



2020 Research Showcase Posters

BIOENGINEERING

Engineering Stealthy Exosomes for Nanomedicine

Brendan Lawler – BIOE Undergraduate
Jiayi Zhang – BIOE Undergraduate
Advisor: Dr. Bill Lu

How do Mammalian Cells Talk to Bacteria Cells

Anna Fraser-Philbin- BIOE Undergraduate
Alex Heiler – BIOE Undergraduate
Advisor: Dr. Zhiwen (Jonathan) Zhang

Utilizing a Gaucher's Disease Model for the Evaluation of a Novel Exosome-Based Enzyme Replacement Therapy

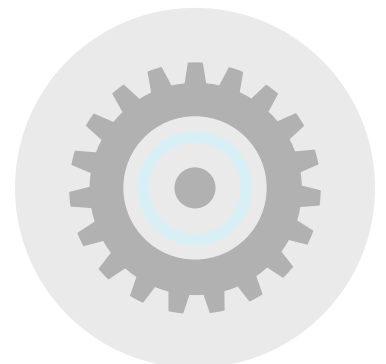
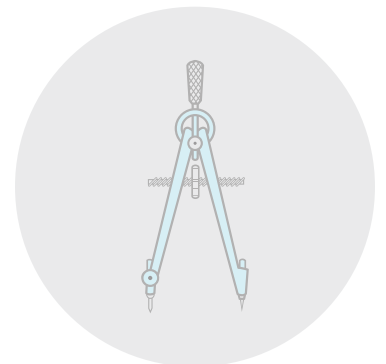
Annie Brown – BIOE Master's Student
Advisor: Dr. Bill Lu

eVision: Influenza Prediction

Andres Calle – CESE Master's Student
George Kouretas - BIOE Undergraduate
Advisor: Dr. Navid Shaghghi

Peek Into the Molecular Origin of Life – Oligomerization of Peptides Introduce Functions

Carley Fowler – BIOE Undergraduate
Jiacheng (Ben) Tan – BIOE Undergraduate
Advisor: Dr. Zhiwen (Jonathan) Zhang



Transfer Lithography Optimization for the Development of Microfluidic Wearable Sensors

Shani Williams – BIOE Undergraduate
Advisor: Dr. Emre Araci

CIVIL, ENVIRONMENTAL, AND SUSTAINABLE ENGINEERING

Flooring Systems with Prestressed Steel Stringers for Cost Benefit

Alexandra Rivera – MECH Undergraduate
Rafaela Barros Barreto – MECH Undergraduate
Advisor: Dr. Amin Ghafooripour

COMPUTER SCIENCE AND ENGINEERING

Causal Modeling for Cybersecurity

Dr. Suchitra Abel – CSEN Postdoctoral Fellow
Jake Singh – CSEN Master's Student
Andrew Tang – CSEN Master's Student
Ethan Paek – CSEN Undergraduate
Advisor: Dr. Ahmed Amer

SBChain: A Parameterized, Hierarchical Blockchain

Daniel Okazaki – CSEN Master's Student
Stephen Pacwa – CSEN Master's Student
Advisors: Dr. Ahmed Amer and Dr. Ahmed Ezzat

Fog Development Kit: A Platform for the Development and Management of Fog Systems

Christopher Desiniotis – CSEN Undergraduate
Colton Powell – CSEN Master's Student
Advisor: Dr. Behnam Dezfouli

Deep Learning for Block-level Compressive Video Sensing

Yifei Pei – CSEN Master's Student
Advisors: Dr. Ying Liu and Dr. Nam Ling

A Super-Fast Deep Network for Moving Object Detection

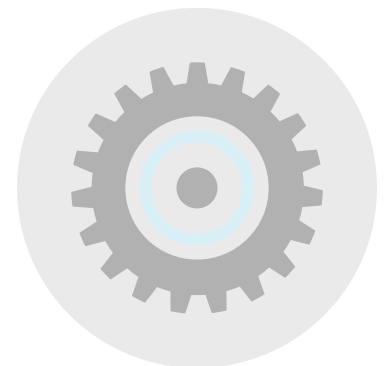
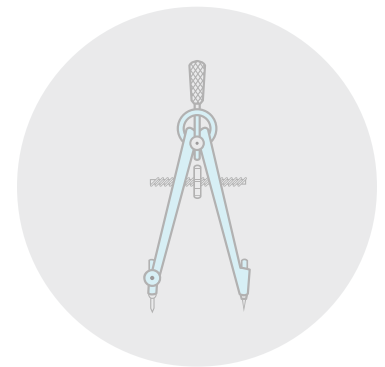
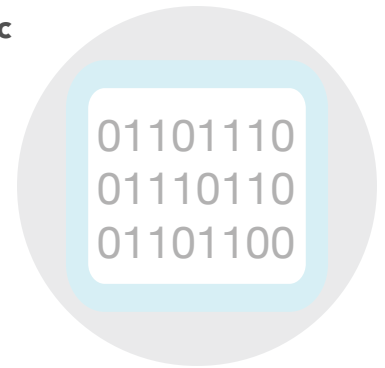
Bingxin Hou – CSEN Ph.D. Student
Advisors: Dr. Ying Liu and Dr. Nam Ling

EAPS: Edge-Assisted Predictive Scheduling in WIFI-based IoT Networks

Jaykumar Sheth – CSEN Ph.D. Student
Cyrus Miremadi – ECEN Undergraduate
Advisor: Dr. Behnam Dezfouli

Lossy Image Compression Encoding Based on Wavelet Transform and Bit Plane Coding

Cihan Ruan – CSEN Ph.D. Student
Advisor: Dr. Nam Ling



Sparse Coding of Intra Luma Prediction Residuals for Screen Content Coding

Michael Schimpf – CSEN Ph.D. Student
Advisor: Dr. Nam Ling



Channel-Separable Neural Network for Block-based Image Compression

Pengli Du – CSEN Ph.D. Student
Advisor: Dr. Ying Liu

A Novel Deep-Learning Approach to Encode Location Information and Its Application On Bike Share Service

Yuan Wang – CSEN Master's Student
Advisor: Dr. Yi Fang

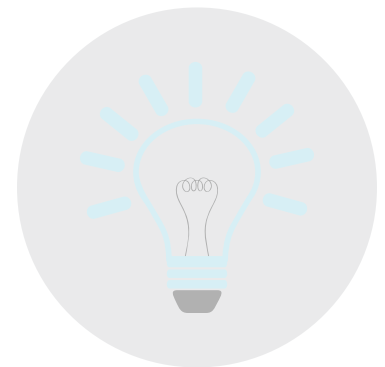


Multi-label Classification for Short Text Utilizing the Label Correlations

Zhiyuan Peng – CSEN Master's Student
Advisor: Dr. Yi Fang

Modeling the Dynamics of Personal Expertise

Xuyang Wu – CSEN Ph.D. Student
Archana Godavarthy – CSEN Ph.D. Student
Advisor: Dr. Yi Fang



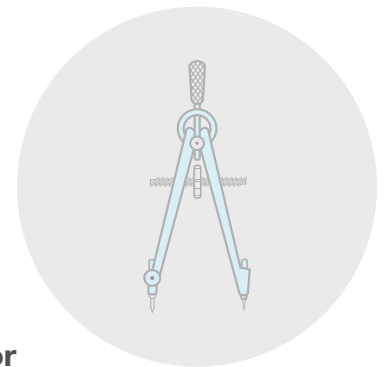
Hydration Automation

Peter Ferguson – CSEN Undergraduate
Nicholas Kniveton – CSEN Undergraduate
Jesse Mayer – CSEN Master's Student
Will Tuttle – CSEN Undergraduate
Advisor: Dr. Navid Shaghaghi

ELECTRICAL AND COMPUTER ENGINEERING

3D Nanocarbon Interconnects

Yu Zheng – ECEN Master's Student
Parth Shah – ECEN Master's Student
Dongmeng Li – ECEN Master's Student
Advisor: Dr. Cary Y. Yang

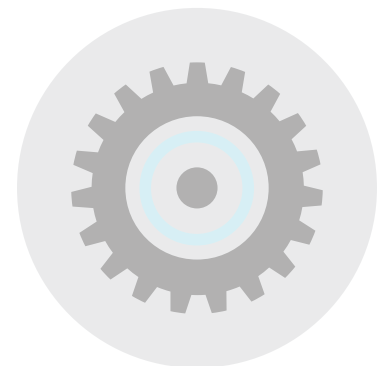


Design of Metamaterial Impedance Matching Surfaces at Near Field for EMC Solutions

Ali Khoshniat – ECEN Ph.D. Student
Advisor: Dr. Ramesh Abhari

Efficient Hardware/Software Co-design Partitioning of WLANs for Software-defined Radio

Rami Akeela – ECEN Ph.D. Student
Advisor: Dr. Shoba Krishnan



**Optimal Energy Management of a University Campus Microgrid
Integrating Solar Energy and Fuel Cell**

Johann Espinosa – ECEN Master’s Student
Sowmya Bellam – ECEN Master’s Student
Advisor: Dr. Maryam Khanbaghi



**Reconfigurable Yagi-Uda Antenna Arrays with Passive Beamforming
for Microwave Hyperthermia Applications**

Nivedita Parthasarathy – ECEN Ph.D. Student
Advisor: Dr. Ramesh Abhari



Autonomous Multi-Robot Exploration of Planetary Caves

Kamak Ebadi – ECEN Ph.D. Student
Advisor: Dr. Sally Wood

A Deep Learning-enabled Guide for the Visually Impaired

Allen Shelton – ECEN Undergraduate
Advisor: Dr. Tokunbo Ogunfunmi

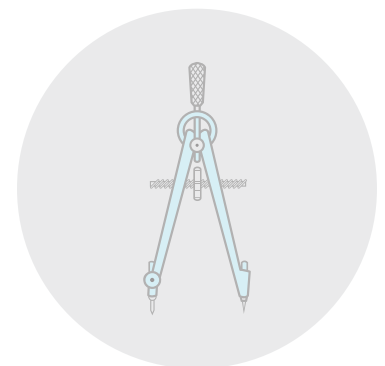


**An Input Power-Aware Efficiency Tracking Technique for Energy
Harvesters in IoT**

Sanad Kavar – ECEN Ph.D. Student
Advisor: Dr. Shoba Krishnan

Distortion Analysis for a Spherical Transmitter

Amritpal Singh – ECEN Undergraduate
Advisor: Dr. Kurt Schab



Face Recognition using Siamese Neural Network

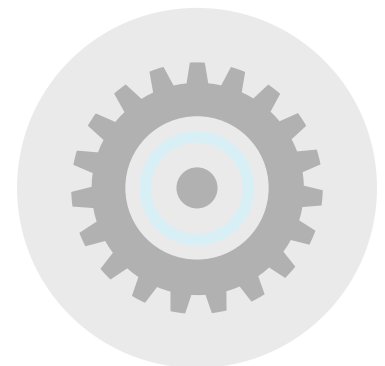
Keshav Pawar – EMGT Master’s Student
Advisor: Dr. Tokunbo Ogunfunmi

A Fast 2-D Convolution Technique for Deep Neural Networks

Anaam Ansari – ECEN Ph.D. Student
Advisor: Dr. Tokunbo Ogunfunmi

**Reconfigurable Substrate Integrated Waveguides Using
Liquid Metal Microvasculature**

Bradley Shirley – ECEN Undergraduate
Advisor: Dr. Kurt Schab



MECHANICAL ENGINEERING

Proof of Concept of Swarm Scalar Field Adaptive Navigation

Shae Hart – MECH Ph.D. Student
Advisor: Dr. Christopher Kitts



Exploring 3-Dimensional Environmental Phenomena with Drone Clusters

Robert Lee – MECH Ph.D.
Advisor: Dr. Christopher Kitts

Aerodynamics of a Forward-Facing Fin

Tioga Benner – MECH Undergraduate
Advisor: Dr. Godfrey Mungal



Shape Memory Alloy Research for Actuation in Extreme Environments

Rachel Stolzman – MECH Master's Student
Ann McGuire – MECH Master's Student
Advisor: Dr. Christopher Kitts

Multi-layer Sensor Data Processing for Occupancy Detection in Residential Buildings

Chenli Wang – MECH Ph.D. Student
Advisor: Dr. Hohyun Lee



Development of a Diving Autonomous Surface Vessel and its Applications in Discrete Sampling

Max Woolsey – MECH Ph.D. Student
Advisor: Dr. Christopher Kitts

Modeling Bacterial Swimming in Biological Fluids

Noah Lordi – Engineering Physics Undergraduate
Ebru Demir – MECH Postdoctoral Fellow
Advisor: Dr. On Shun Pak

