

SRIP 2021 PROJECTS

FACULTY MENTOR

PROJECT TITLE

<p>An, Cheolhong</p>	<ol style="list-style-type: none"> 1. OCT-Angiography processing for disease detection and classification 2. Optical Coherence Tomography (OCT) system 3. Real-time cell classification for the flow cytometry 4. Machine learning based dynamic fracture behavior tracking and estimation
<p>Atanasov, Nikolay</p>	<ol style="list-style-type: none"> 1. Python Robotics 2. Metric-Semantic Simultaneous Localization and Mapping 3. Model-based Inverse Reinforcement Learning
<p>Balasubramani, Pragathi</p>	<ol style="list-style-type: none"> 1. Understanding the relationship between simultaneously recorded electro gastrogram signals and electro encephalogram signals during cognitive activities. 2. Understanding how the neural activities vary between cognitive tasks for a person
<p>Cosman, Pamela C</p>	<ol style="list-style-type: none"> 1. Eye-tracking for quantifying reading behavior 2. Using mobile devices and computer vision to aid physical therapy 3. Point cloud compression
<p>Depp, Colin</p>	<ol style="list-style-type: none"> 1. Applying network analyses to understand regulation of emotion and cognition
<p>Der-Avakian, Andre</p>	<ol style="list-style-type: none"> 1. Developing a wireless EEG recording system for rodents

<p>Dey, Sujit</p>	<ol style="list-style-type: none"> 1. Deep Learning Enabled mmWave Communications for Connected and Autonomous Vehicles 2. Personalized Effect of Health Behavior on Blood Pressure: Machine Learning Based Prediction and Recommendation 3. Driver's State of Mind and Intent Detection using Multiple Sensors and Machine Learning 4. Sustainable Wireless Communications with Optimal Utilization of Renewable Energy and Storage 5. GPS-free Object Tracking and Trajectory Prediction in Smart Transportation 6. Exploring Edge Computing in 5G and future directions towards 6G
<p>Ettenhofer, Mark</p>	<ol style="list-style-type: none"> 1. Eye tracking in VR for diagnosis of neurological conditions 2. Computer vision for analysis of eye movements and pupil response in individuals with brain injuries 3. Multi-modal physiological signal processing for assessment of human performance after brain injury
<p>Eyler, Lisa T</p>	<ol style="list-style-type: none"> 1. Facilitating Expansion of the Global Aging and Geriatrics Experiments in Bipolar Disorder Database: Semi-automated Intake of Archival Clinical Datasets
<p>Gerstoft, Peter</p>	<ol style="list-style-type: none"> 1. MIMO Array Channel Sounder and Beamformer 2. Acoustic room characterization and speaker tracking with google voice
<p>Gudem, Prasad</p>	<ol style="list-style-type: none"> 1. Wireless Tracking of Boomerang Flight Trajectory Using Ultra-Wide-Band Position Location System 2. Design of Analog Circuits to Stabilize Ferroelectric Capacitors 3. Study of N-path Filters with Arbitrary Source/Load Impedances

<p>Guido K.W. Frank, MD; Mateusz Gola, PhD</p>	<p>1. Developing Virtually Reality to Treat and Understand the Neurobiology of Anorexia Nervosa</p>
<p>Harinath Garudadri (QI) & Eric Granholm (SoM), Colin Depp (SoM)</p>	<p>1. Psi-Fi Oral Interactions 2. Psi-Fi Physical Activity Monitoring 3. Psi-Fi Contextual Ecological Momentary Assessment</p>
<p>Javidi, Tara</p>	<p>1. DetecDrone 2. Active Information Acquisition</p>
<p>Kang, Mingu</p>	<p>1. Traffic Sign Recognition on FPGA with XGBoost Algorithm 2. Optimal bit-quantization and channel skipping in neural networks 3. Deep neural network accelerator with analog switched-capacitors 4. Dynamic approximate computing for deep neural network with real-time bit precision modulation in FPGA 5. Data sparsity-aware dynamic frequency modulation for deep neural network acceleration in FPGA 6. Deep neural network training under noisy devices</p>
<p>Le, Hanh-Phuc</p>	<p>1. Power Electronics for Sustainable Renewable Energy in Rural Areas</p>
<p>Lerman, Imanuel</p>	<p>1. Novel Sensing and Stimulation of Human Nerves that Encode Infection 2. Vagus Nerve Stimulation Effects on Sleep and Learning</p>
<p>Lin, Bill</p>	<p>1. Machine Learning for Real-Time Wireless and Wireline Networking Problems 2. SMT-Based Optimizations for Difficult-to-Solve Design Problems</p>

<p>Lo, Yuhwa</p>	<ol style="list-style-type: none"> 1. Viral RNA detection for virus in the environments 2. Detection of single photons for LIDAR and imaging
<p>Mercier, Patrick</p>	<ol style="list-style-type: none"> 1. Ultra-miniaturized power converters for microrobotic applications 2. Wearable physiochemical sensor technologies 3. Ultra-low-power wireless communication circuits
<p>Meyer, Florian</p>	<ol style="list-style-type: none"> 1. Radar-Based Machine Perception 2. Underwater Acoustic Environmental Inversion
<p>Morris, Karcher</p>	<ol style="list-style-type: none"> 1. Design & Development of Wearable Device to Measure a Surgeon's Ergonomic Performance 2. Mixing Circuits and Python for Education 3. Educational Technologies in ECE 5 4. Bringing ECE 5 Curriculum to High School
<p>Ng, Tina</p>	<ol style="list-style-type: none"> 1. Objective assessment of motor disorder
<p>Nguyen, Truong</p>	<ol style="list-style-type: none"> 1. Autonomous Transducer Positioning System for AI-guided Scanning 2. Real-Time System for Detecting and Localizing the Vagus Nerve in Ultrasound Scans 3. Automated Visual Inspection system for Tire Defect

<p>Nuno, Vasconcelos</p>	<ol style="list-style-type: none"> 1. Natural World 3D Computer Vision 2. Long-tailed recognition of visual relationships 3. Visualization guided machine teaching 4. 3D object detection with monocular images and radar data in Autonomous driving 5. Computational Cancer ImmunoPathology 6. Multi-view machine learning for identifying underwater organisms from recorded data 7. Self-Supervised Learning for Plankton Image Classification 8. Explainable AI for self-supervised learning 9. An iterative framework for dataset collection 10. Sound source localization in 360 video 11. Fusing RGB and thermal images for improved computer vision 12. Understanding group activity in public spaces
<p>Rosing, Tajana</p>	<ol style="list-style-type: none"> 1. Accelerating bioinformatics workloads 2. Hyperdimensional computing systems design 3. Acceleration of Fully Homomorphic Encryption in PIM
<p>Schurgers, Curt</p>	<ol style="list-style-type: none"> 1. Engineers for Exploration
<p>Taswell, Carl</p>	<ol style="list-style-type: none"> 1. Wavelet-Based Algorithms for Rendering, Region-Segmentation and Path-Following in BrainWatch VR Software 2. Effect of Neurodegenerative Disease Status on Coregistration Accuracy of PET and MRI Brain Scans 3. Artificial Intelligence Methods for Concept-Similarity Detection and Matching for Brain Sciences Literature

<p>Shi, Yuanyuan</p>	<p>1. Learning to Run a Power Network in a Sustainable World</p>
<p>Turakhia, Yatish</p>	<p>1. A GPU-accelerated library for aligning genomic long reads</p> <p>2. Real-time SARS-CoV-2 phylogenetics</p>
<p>Wang, Xiaolong</p>	<p>1. Vision-based RL for Robotics Manipulation and Control</p> <p>2. Learning Explicit 3D Representation from Videos</p> <p>3. Self-Supervised Learning with Videos</p>
<p>Xie, Pengtao</p>	<p>1. Interpretable Generation of Diagnosis Reports from Medical Images</p> <p>2. Multi-task Learning with Graph Neural Networks</p> <p>3. Discriminative Learning of Graph Structure</p> <p>4. Few-shot Multi-instance Learning</p> <p>5. Automatic Medical Knowledge Graph Construction Using Deep Reinforcement Learning</p> <p>6. Diversity-promoting Learning of Hierarchical Latent Space Models</p> <p>7. Curriculum Determinantal Point Process for Diverse Subset Selection</p> <p>8. When Gaussian Process Meets Determinantal Point Process: Learning Diverse Inducing Points</p> <p>9. Curriculum Determinantal Point Process for Diverse Subset Selection</p>

<p>Yip, Michael</p>	<ol style="list-style-type: none"> 1. Development of a Surgical Robot's User Interface 2. State estimation for autonomous suturing 3. Planning in the constrained bimanual end-effector space 4. Data efficient learning algorithms for learning from demonstrations 5. Real-to-sim Control and Learning for Automation in Surgical Manipulation 6. Data-driven Approaches for Modeling and Control of Catheter Like Continuum Robots
<p>Zhang, Xinyu</p>	<ol style="list-style-type: none"> 1. A Programmable Millimeter-Wave Massive MIMO Radio for 5G Communications and Sensing 2. Motion tracking using smart earbuds 3. Sensing Everyday Activities Using WiFi: A Machine Learning Based Framework
<p>Zheng, Yang</p>	<ol style="list-style-type: none"> 1. Advanced Control and Optimization for Autonomous Vehicles in Mixed Traffic Systems

SRIP 2020 PROJECTS

FACULTY MENTOR	PROJECT TITLE
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<p>An, Cheolhong</p>	<ol style="list-style-type: none"> 1. Retinal Feature extraction and tracking 2. OCT-Angiography processing for disease detection and classification 3. Real-time cell classification for the flow cytometry 4. Lensless camera: Simultaneous Depth and Scene reconstruction
<p>Atanasov, Nikolay</p>	<ol style="list-style-type: none"> 1. Python Robotics 2. Power design for a quadrotor robot 3. Modeling, Simulation and Control of an Autonomous Quadrotor
<p>Baghdadchi, Saharnaz</p>	<ol style="list-style-type: none"> 1. Generation of spatial polarization and phase patterns at focus 2. Fiber-based endoscopy
<p>Bharadia, Dinesh</p>	<ol style="list-style-type: none"> 1. Smartphone Enabled Ubiquitous Indoor Navigation and Mapping 2. Robust SLAM for Autonomous System by combining light-based sensing (Lidar, Camera) and RF-based sensing 3. Automotive radar perception in bad weather 4. Deep Learning driven Intelligent Nonlinear communications 5. In-Body sensing and localization of sensors 6. Sensing Driven Communication using Deep Learning 7. Autonomous monitoring and management of the spectrum 8. Securing your communication with IoT devices using device Identification 9. Bespoke FPGA Based Communication Testbed 10. Wireless virtual reality over 5G testbed 11. Smart Radio: Simultaneous communication and sensing 12. mm-accurate wireless localization for VR/AR and robotics
<p>Cosman, Pamela</p>	<ol style="list-style-type: none"> 1. Detection of conversational engagement cues 2. Eye-tracking to detect attention and distance to multiple faces 3. 360 degree video streaming

<p>Dey, Sujit</p>	<ol style="list-style-type: none"> 1. Driver's State of Mind Detection using Multiple Sensors and Machine Learning 2. Real-time Augmented Perception of Occluded Objects on moving Vehicular Camera View 3. Sustainable Wireless Communications with Optimal Utilization of Renewable Energy and Storage 4. Personalized Effect of Health Behavior on Blood Pressure: Machine Learning Based Prediction and Recommendation 5. Matching objects with large viewpoint differences
<p>Franceschetti, Massimo</p>	<ol style="list-style-type: none"> 1. Efficient deep neural networks
<p>Gerstoft, Peter</p>	<ol style="list-style-type: none"> 1. MIMO Array Channel Sounder and Beamformer 2. Acoustic room characterization and speaker tracking with google voice
<p>Gilja, Vikash</p>	<ol style="list-style-type: none"> 1. Robust neural prostheses using non-volitional activity 2. Integration of depth sensing to track hand movements for neural prosthesis experiments 3. Automation of Language Processing and Audio Classification 4. Neurally Driven Vocal Prosthesis: Vocal Production Decoding from Neural Activity
<p>Gudem, Prasad</p>	<ol style="list-style-type: none"> 1. 5G Based Position Location System 2. Design of Bias Circuit for Novel Negative Capacitance Field Effect Transistor (NCFET) 3. N-Path Filter 4. Fast-locking PLL design 5. Impact of FR1 5G NR Jammers on UWB System
<p>Hall, Drew</p>	<ol style="list-style-type: none"> 1. IC Testing 2. IC Block Design

Javidi, Tara	<ol style="list-style-type: none"> 1. DetecDrone: DRONES THAT THINK. Using AI-enabled drones to augment human vision & senses 2. Mathematical Underpinning of Information Acquisition Systems
Kim, Alicia	<ol style="list-style-type: none"> 1. Design optimization for metamaterial
Khoshabeh, Ramsin	<ol style="list-style-type: none"> 1. Not-So-Smart PCB Racer 2. Optical Blood Pressure Sensor 3. Synergistic IoT Cars
Kuzum, Duygu	<ol style="list-style-type: none"> 1. Implantable Neurodevices 2. Neuromorphic Devices for In-memory Computing
Le, Hanh-Phuc	<ol style="list-style-type: none"> 1. Power Converter for Soft Robots
Lerman, Imanuel	<ol style="list-style-type: none"> 1. Development of Focused Ultrasound Stimulation Therapy for Neuronal Diseases 2. Optically Pumped Magnetometers to Detect Peripheral Neuronal Signals 3. Vagus Nerve Stimulation Effects on Sleep and Learning
Lo, Yu-Hwa	<ol style="list-style-type: none"> 1. Microfluidic and photonic biosensors 2. Single photon detectors for sensing and imaging
Mercier, Patrick	<ol style="list-style-type: none"> 1. Magnetic Human Body Communication Systems for Next-Generation Wearables 2. Power management integrated circuits for microrobotics 3. Low-power wireless receivers for IoT applications
Meyer, Florian	<ol style="list-style-type: none"> 1. Long-Range Maritime Situational Awareness 2. Radar-Based Machine Perception
Mi, Chris	<ol style="list-style-type: none"> 1. Modeling of an extremely high power charging system for all electric airplanes 2. Modeling of the power systems of an all-electric passenger airplane

Milstein, Larry	<ol style="list-style-type: none"> 1. Spectrum Sensing using Machine Learning for Cognitive Radio
Mirarab, Siavash	<ol style="list-style-type: none"> 1. Reconstructing evolutionary distances from bits and pieces of strings 2. Expectation-Maximization (EM) algorithms for inferring ancient evolutionary times 3. Statistical models of amino acid evolution that account for biochemical properties
Ng, Tina	<ol style="list-style-type: none"> 1. Recording Repetitive Behaviors and Physiological Stress in Autism 2. Objective assessment of motor disorders 3. Understanding Cycle Life of Conducting Polymers as Anodes for High-Energy Supercapacitors
Nguyen, Truong	<ol style="list-style-type: none"> 1. Human-Inspired Camera Platform 2. New Feature Matching Algorithm and Applications 3. Collaborative machine vision for autonomous vehicle 4. Gaze Estimation using Multiple Sensors and Machine Learning 5. Remote Sensing Technology to Improve Community-Based Fall Risk Assessment 6. Vision-based Human Biometrics Estimation 7. ECE-centric hands-on projects demonstrating Mathematics concepts 8. Human Pose and Activity Recognition
Orlitsky, Alon	<ol style="list-style-type: none"> 1. Explanation and Visualization of Random Phenomena 2. Visual and Machine learning Tools for Conference Organization
Schurgers, Curt	<ol style="list-style-type: none"> 1. Engineers for Exploration 2. Development of educational technologies

<p>Vasconcelos, Nuno</p>	<ol style="list-style-type: none"> 1. Datasets for Natural World 3D Computer Vision 2. Long-tailed recognition of visual relationships 3. Visualization guided machine teaching 4. 3D object detection with monocular images and radar data in Autonomous driving 5. Computational Cancer ImmunoPathology 6. Reinforcement Learning for Underwater Communications 7. Classification of point cloud data 8. Biological Imaging 9. Machine Learning for Clinical Decision Support
<p>Wang, Edward</p>	<ol style="list-style-type: none"> 1. Ubiquitous Computing for Healthy Living
<p>Wang, Xiaolong</p>	<ol style="list-style-type: none"> 1. Compositional Action Recognition 2. Functional Grasping 3. Video Editing and Synthesis
<p>Xie, Pengtao</p>	<ol style="list-style-type: none"> 1. Discriminative Learning of Graph Structure 2. Few-shot Multi-instance Learning 3. When Gaussian Process Meets Determinantal Point Process: Learning Diverse Inducing Points 4. Multi-task Learning with Graph Neural Networks 5. Curriculum Determinantal Point Process for Diverse Subset Selection 6. Diversity-promoting Learning of Hierarchical Latent Space Models 7. Interpretable Generation of Diagnosis Reports from Medical Images 8. Automatic Medical Knowledge Graph Construction Using Deep Reinforcement Learning 9. Teach Machine to Pass the United States Medical Licensing Examination

<p>Yip, Mike</p>	<ol style="list-style-type: none"> 1. Development of Reinforcement Learning Environments for Surgical Robotics 2. Machine Learning for Robot Planning and Control 3. Machine Learning for Task and Motion Planning 4. Hierarchical Reinforcement Learning for real-world Robotics problems 5. Integration of Learning-based Motion Planners with standard motion planning libraries 6. Bayesian Reinforcement Learning for Needle Insertion Task In Robot Surgery 7. Surgical Robotic System Tracking within an MRI Scanner
<p>Zhang, Xinyu</p>	<ol style="list-style-type: none"> 1. AI-Driven 5G Networks for Connected Vehicles 2. A Programmable Millimeter-Wave Massive MIMO Radio for 5G Communications and Sensingfor 3. Sensing Everyday Activities Using WiFi: A Machine Learning Based Framework 4. Mobile Indoor Navigation Using Existing Lighting Infrastructure

SRIP 2019 PROJECTS

**FACULTY
MENTOR**

PROJECT TITLE

<p>Abi-Samra, Nicholas</p>	<ol style="list-style-type: none"> 1. Tablet Application for Tracking and Analyzing Damage from Wildfires and Extreme Weather 2. Transmission line design applets 3. Distribution systems applets
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<p>An, Cheolhong</p>	<ol style="list-style-type: none"> 1. Lensless Camera 2. ML network for Medical image analysis 3. CNN: Image sensor to color image 3. ML network to overlay metadata onto medical images
<p>Atanasov, Nikolay</p>	<ol style="list-style-type: none"> 1. Gazebo Simulation of a Ground-Aerial Robot Team 2. Lidar Odometry and Trajectory Tracking for an Autonomous Racecar 3. Modeling, Simulation and Control of an Autonomous Quadrotor
<p>Bae, Won</p>	<ol style="list-style-type: none"> 1. Deep Learning in Medical Imaging: Musculoskeletal Applications
<p>Baghdadchi, Saharnaz</p>	<ol style="list-style-type: none"> 1. Singular imaging in turbulence 2. Endoscopic Reflectance Spectroscopy
<p>Bharadia, Dinesh</p>	<ol style="list-style-type: none"> 1. Wireless Virtual Reality Headset using Deep Learning 2. All Weather Radar for Autonomous Driving 3. An app Indoor Navigation -- on smartphones 4. Wireless Virtual Reality tracking with standard glasses 5. BLE localization and communication platform 6. Helping Disaster zone using drones to identify human under the rubble
<p>Cosman, Pamela</p>	<ol style="list-style-type: none"> 1. Machine learning & eye-tracking for autism assessment 2. Speech processing to detect overlap and rate
<p>Cleary, Daniel</p>	<ol style="list-style-type: none"> 1. Development of neurosurgical simulations for training resident physicians

<p>Deledalle, Charles</p>	<p>1. Full-Focus Image Reconstruction</p> <p>2. PNG2SVG: Generating vectorial graphics from rasterized versions</p> <p>3. Image restoration with bi-directional GAN priors</p>
<p>Dey, Sujit</p>	<p>1. Improving collaboration in autonomous vehicles</p> <p>2. Towards On-demand Virtual Physical Therapist: Patient Performance Evaluation and Balance Ability Quantification using Multiple Sensors</p> <p>3. Personalized Effect of Health Behavior on Blood Pressure: Machine Learning Based Prediction and Recommendation</p> <p>4. Towards On-demand Virtual Physical Therapist: Patient Performance Evaluation and Balance Ability Quantification using Multiple Sensors</p> <p>5. Personalized Effect of Health Behavior on Blood Pressure: Machine Learning Based Prediction and Recommendation</p>
<p>Dow, Steven</p>	<p>1. Design for San Diego</p>
<p>El Amili, Abdelkrim</p>	<p>1. Opto-electrical probes for Silicon chips testing</p>
<p>Esmaili, Reza</p>	<p>1. Solar Charger for residential application</p> <p>2. 4-Leg 3-Phase UPS System</p> <p>3. Power converters and control for wind Turbine application</p> <p>4. Control of Permanent Magnet Drive for Electric Car Application</p>
<p>Garudadri, Harinath</p>	<p>1. Human Activity Classification and Quantification</p> <p>2. Ambulatory Pupillometry</p>

Gerstoff, Peter	<ol style="list-style-type: none"> 1. Sparse modeling and machine learning in geoscience 2. Detecting and Classifying Ships in the Ocean with Sound 3. MIMO Array Channel Sounder and Beamformer
Ghoudjehbaklou, Hassan	<ol style="list-style-type: none"> 1. Locating Oscillation Source, Using PMU Measurements 2. Multi-terminal lines impedance estimation 3. Power System Dynamic Network Reduction
Gilja, Vikash	<ol style="list-style-type: none"> 1. The Development of an Avian Model for Neurally Driven Vocal Prostheses 2. Behavioral Context Decoding from Neural Activity 3. Estimating Brain State with High-Density Electrode Grids
Gudem, Prasad	<ol style="list-style-type: none"> 1. Hawk-eye to capture flight trajectory of a boomerang 2. Non-GPS Accurate Positioning Location
Hall, Drew	<ol style="list-style-type: none"> 1. Ring-based Potentiostat 2. Integrated Circuit Testing
Hessenauer, Sam	<ol style="list-style-type: none"> 1. Blockchain AR Collectibles 2. Machine Learning on 3D protein models for Binding Sites
Hsueh, Tzu-Chien & El Amili, Abdelkrim	<ol style="list-style-type: none"> 1. Electrical and Optical Links Modeling and Budget Analyses 2. Low-Power Integrated Lidar Circuits and Systems
Kuzum, Duygu	<ol style="list-style-type: none"> 1. Neuroelectronic interfaces for brain 2. Neuro-inspired in memory computing systems
Leung, Vincent	<ol style="list-style-type: none"> 1. Wireless Power Transfer for Intra-cortical Miniaturized Distributed Brain Implant ICs 2. Design and Test of CMOS ICs for Adaptive, Energy-Optimized Wireless Brain Implant Network 3. Circuit Design for Ultra-Low-Power Radio and Ambient RF Energy Harvesting for IoT Applications

<p>Lin, Bill</p>	<ol style="list-style-type: none"> 1. Solving engineering problems with AlphaZero 2. Solving engineering problems with SAT and SMT solvers
<p>Liu, Zhaowei</p>	<ol style="list-style-type: none"> 1. 3D laser scanner
<p>Liu, Thomas</p>	<ol style="list-style-type: none"> 1. Studying Dynamic Brain Activity with Simultaneous EEG-fMRI 2. Deep Learning for Understanding Brain Activity 3. High Performance Functional MRI 4. Non-invasive imaging of the neurovascular system using magnetic resonance imaging (MRI)
<p>Lo, Yu-Hwa</p>	<ol style="list-style-type: none"> 1. Biophotonic systems for medical research 2. Image processing and machine learning for biological systems
<p>Mi, Chris</p>	<ol style="list-style-type: none"> 1. Battery parameter identification
<p>Milstein, Larry</p>	<ol style="list-style-type: none"> 1. Video Transmission over Underwater Communication Channels
<p>Mirarabbaygi, Siavash</p>	<ol style="list-style-type: none"> 1. New integrated algorithms for understanding microbiome 2. Solving the mystery of how human segmental duplications evolved 3. Noise reduction techniques for inferring evolutionary trees from genomic data
<p>Ng, Tina</p>	<ol style="list-style-type: none"> 1. Organic Short-Wavelength Infrared Photodetectors 2. Recording Motor Disorder 3. Understanding Cycle Life of Conducting Polymers as Anodes for High-Energy Supercapacitors

<p>Nguyen, Truong</p>	<ol style="list-style-type: none"> 1. Multi-camera calibration 2. 3D face Modeling and Reconstruction 3. Human Activity Dataset Collection and Annotation 4. Human Pose and Activity Recognition 5. 3D Scene Reconstruction for VR
<p>Nomura, Kenji</p>	<ol style="list-style-type: none"> 1. High speed and Highly integrated vertical
<p>Obrzut, Sebastian</p>	<ol style="list-style-type: none"> 1. Signal Processing of Parkinson's Disease Tremor Data from Virtual Reality Application 2. Deep Learning SPECT Medical Image Reconstruction 3. Compressive Sensing Absorber for Molecular Breast Imaging
<p>Schurgers, Curt</p>	<ol style="list-style-type: none"> 1. Engineers for Exploration
<p>Seshadri, Nambi</p>	<ol style="list-style-type: none"> 1. Machine learning for communication systems
<p>Silberman, Jack</p>	<ol style="list-style-type: none"> 1. Affordable Open Source Smart Wheelchair
<p>Suresh, Preetham</p>	<ol style="list-style-type: none"> 1. Digital Manikin (Mixed Reality Application) 2. Real time Labeled Ultrasound Reference 3. Stream Vitals into EPIC
<p>Taswell, Carl</p>	<ol style="list-style-type: none"> 1. Development of Algorithms for Rendering, Region-Segmenting and Path-Following in BrainWatch VR Software 2. Effect of Neurodegenerative Disease Status on Co-Registration Accuracy of PET and MRI Brain Scans 3. Automated Meta-Analyses of Dementia Literature with the SOLOMON Ontology and Nexus-PORTAL-DOORS System

<p>Taur, Yuan</p>	<ol style="list-style-type: none"> 1. Modeling of I-V characteristics of short-channel double-gate MOSFETs above threshold 2. Modeling of output conductance of short-channel MOSFETs in saturation
<p>Thode, Aaron</p>	<ol style="list-style-type: none"> 1. Embedded real-time classification of whale and noise signals on a marine mammal bioacoustic tag. 2. Design and assembly of an autonomous underwater acoustic recording system
<p>Touri, Behrouz</p>	<ol style="list-style-type: none"> 1. Distributed Optimization over Time-varying Graphs 2. Models of Scale-free Networks
<p>Unpingco, Jose</p>	<ol style="list-style-type: none"> 1. Python Package for Multivariate Imputation by Chained Equations
<p>Vasconcelos, Nuno</p>	<ol style="list-style-type: none"> 1. Image collection with drones 2. Object size estimation from one single real-world image 3. Biological Imaging 4. Self-driving and multi-task learning 5. Classification of point cloud data 6. Exploration of the impact of synthesized data for real-world computer vision problems 7. Compressed deep learning networks 8. Multi-frame visual recognition 9. Underwater microscopy
<p>Vera, David</p>	<ol style="list-style-type: none"> 1. Radiopharmacokinetic System Design
<p>Yip, Mike</p>	<ol style="list-style-type: none"> 1. Data-Efficient Reinforcement and Imitation Learning 2. Computational Motion Planning 3. Sparse Regression for Distance Estimation in Robot Configuration Space

	<p>4. Model-free control and modeling methods for muscle-powered robotics research</p>
Zhang, Xinyu	<p>1. AI-Driven 5G Networks</p> <p>2. Developing a Hardware Platform to Support 5G Communications and Wireless Sensing Applications</p> <p>3. Sensing Everyday Activities Using WiFi: A Machine Learning Based Framework</p> <p>4. An Android App for Indoor Navigation</p>

SRIP 2018 PROJECTS

PARTICIPATING COMPANIES

COMPAN Y PROJECT TITLE

In-Q-Tel	<p>1. Secure Deep Learning</p> <p>2. Classifying Synthetic Biology</p> <p>3. Audio Recognition at the Edge</p> <p>4. Text in Video</p>
Kneron	<p>1. Deep learning Research on Embedded Device</p>
Konch	<p>1. Audio and Video ML @ Konch.AI</p>
ProductBio	<p>1. Software Engineering Internship for Sustainable Procurement Data Science Company</p>

PARTICIPATING FACULTY

**FACULTY
MENTOR**

PROJECT TITLE

Abi-Samra, Nicholas	<ol style="list-style-type: none">1. Dynamic models for three ancillary services for battery energy storage systems (BESS)2. Frequency Scan tool for subsynchronous resonance studies3. A spatial load forecasting tool accounting for PV and EV penetration
An, Cheolhong	<ol style="list-style-type: none">1. Parallel lossless compression on GPU2. Real-time GPU Database and Interactive Visualization3. CNN: Image sensor to color image
Atanasov, Nikolay	<ol style="list-style-type: none">1. Build a robot from scratch and make it move!
Baghdadchi, Saharnaz	<ol style="list-style-type: none">1. Trapping and manipulating particles with highly focused beams2. Imaging through scattering using spatially encoded optical beams
Bandaru, Prabhakar (MAE)	<ol style="list-style-type: none">1. Electrical characteristics, and quantum capacitance of two-dimensional materials2. Thermal characteristics of graphene, for device applications
Cosman, Pam	<ol style="list-style-type: none">1. Using eye-tracking glasses to quantify looks in social interactions
Cosman, Pam and Taswell, Carl	<ol style="list-style-type: none">1. Development of Algorithms for Rendering, Region-Segmenting and Path-Following in BrainWatch VR Software
Cubukcu, Ertugrul	<ol style="list-style-type: none">1. Two-dimensional optical antennas

Depp, Colin	<ol style="list-style-type: none"> 1. Brief mobile intervention for suicide prevention in the community
Garudadri, Hari	<ol style="list-style-type: none"> 1. Multisensory stimulus to promote executive function and motor competence 2. High density, high resolution, wireless wearable EEG
Gerstoft, Peter	<ol style="list-style-type: none"> 1. Sparse modeling and machine learning in geoscience 2. MIMO Array Processing for Atmospheric Duct Detection
Hylton, Todd	<ol style="list-style-type: none"> 1. A smart camera using predictive machine learning
Jaffe, Jules	<ol style="list-style-type: none"> 1. Enabling Real-Time Video Control Underwater via an LED Communications Array 2. Nano-AUV Low Cost Microscopy and Sensing
Javidi, Tara	<ol style="list-style-type: none"> 1. Real-time Object detection and Tracking for Self-driving Cars, Assistive Drones, and Smart Homes 2. Drone formations for wireless connectivity 3. From Smart Cities to Connected Vehicles
Khoshabeh, Ramsin	<ol style="list-style-type: none"> 1. PiB: Learning Python 2. PiB: iOS App Development 3. PiB: Augmented Reality 4. PiB: Android App Development 5. PiB: Artificial Intelligence 6. Intelligent Whiteboard Capture with ML 7. Intelligent Whiteboard Capture API
Kleinfeld, David (Physics)	<ol style="list-style-type: none"> 1. Few GHz pulse counter for PMT output

<p>Kuzum, Duygu</p>	<ol style="list-style-type: none"> 1. Deep Neural Nets for Biophysical Modeling of Brain Networks 2. Neuromorphic systems for unsupervised learning 3. Implatable Neurodevices for Probing Brain Circuits
<p>Leung, Vincent</p>	<ol style="list-style-type: none"> 1. Enabling a Wireless Communication Network of Brain Implants 2. Develop a hands-on Wireless Communication Project based on NI's SDR Platform
<p>Liu, Zhaowei</p>	<ol style="list-style-type: none"> 1. High speed optical imaging
<p>Lo, Yu-Hwa</p>	<ol style="list-style-type: none"> 1. Detection of single photons 2. Wearable medical devices for detection of blood flow and cardio output 3. 3D imaging flow cytometer and cell sorter
<p>Milstein, Larry</p>	<ol style="list-style-type: none"> 1. Machine Learning for Cognitive Radio
<p>Mi, Chris</p>	<ol style="list-style-type: none"> 1. Wireless Charging of Multiple Mobile Devices Over a Large Distance
<p>Ng, Tina</p>	<ol style="list-style-type: none"> 1. Recording Repetitive Behaviors in Autism 2. Polymer photodiode for infrared spectrum
<p>Nguyen, Truong</p>	<ol style="list-style-type: none"> 1. Camera Systems for 3D Scene Reconstruction 2. Transmission of Touch VR 3. High quality free viewpoint video generation
<p>Schurgers, Curt</p>	<ol style="list-style-type: none"> 1. Engineers for Exploration

<p>Silberman, Jack</p>	<ol style="list-style-type: none"> 1. UC San Diego Smart Open Source Wheelchair 2. UCEMBDEV (University of California Embedded Systems Development Testbed for Robotics) 3. UCESCR (University of California San Diego Electronic Speed Controller for Robotics)
<p>Taur, Yuan</p>	<ol style="list-style-type: none"> 1. Modeling of MOSFET output conductance in the saturation region
<p>Vasconcelos, Nuno</p>	<ol style="list-style-type: none"> 1. Image collection with drones 2. Deep learning to measure image quality 3. Deep Learning for Object Size Estimation from Real World Images 4. Using synthetic data for training deep learning systems 5. Efficient Deep Learning for Drones and Smart Phones 6. The role of context in object detection 7. Deep Learning for Biological Imaging 8. Multi-frame visual recognition 9. Synthesize hand gesture sequences for deep learning 10. Action prediction in videos using Convolutional Neural Networks
<p>Yip, Mike</p>	<ol style="list-style-type: none"> 1. Snake robot for colonoscopy 2. Reinforcement Learning in OpenAI Gym 3. Automating Robotic Surgery
<p>Yu, Angela</p>	<ol style="list-style-type: none"> 1. Computational Modeling of Human Face Processing
<p>Zhang, Xinyu</p>	<ol style="list-style-type: none"> 1. An Android App for Indoor Navigation 2. Sensing heart rate using WiFi 3. Enabling 5G Mobile Wireless Networks At Scale

4. A Hardware Platform to Support 5G Communications and Wireless Sensing Applications

SRIP 2021 PROJECTS

FACULTY MENTOR

PROJECT TITLE

An, Cheolhong	<ol style="list-style-type: none"> 1. OCT-Angiography processing for disease detection and classification 2. Optical Coherence Tomography (OCT) system 3. Real-time cell classification for the flow cytometry 4. Machine learning based dynamic fracture behavior tracking and estimation
Atanasov, Nikolay	<ol style="list-style-type: none"> 1. Python Robotics 2. Metric-Semantic Simultaneous Localization and Mapping 3. Model-based Inverse Reinforcement Learning
Balasubramani, Pragathi	<ol style="list-style-type: none"> 1. Understanding the relationship between simultaneously recorded electro gastrogram signals and electro encephalogram signals during cognitive activities. 2. Understanding how the neural activities vary between cognitive tasks for a person
Cosman, Pamela C	<ol style="list-style-type: none"> 1. Eye-tracking for quantifying reading behavior 2. Using mobile devices and computer vision to aid physical therapy 3. Point cloud compression
Depp, Colin	<ol style="list-style-type: none"> 1. Applying network analyses to understand regulation of emotion and cognition
Der-Avakian, Andre	<ol style="list-style-type: none"> 1. Developing a wireless EEG recording system for rodents

<p>Dey, Sujit</p>	<ol style="list-style-type: none"> 1. Deep Learning Enabled mmWave Communications for Connected and Autonomous Vehicles 2. Personalized Effect of Health Behavior on Blood Pressure: Machine Learning Based Prediction and Recommendation 3. Driver's State of Mind and Intent Detection using Multiple Sensors and Machine Learning 4. Sustainable Wireless Communications with Optimal Utilization of Renewable Energy and Storage 5. GPS-free Object Tracking and Trajectory Prediction in Smart Transportation 6. Exploring Edge Computing in 5G and future directions towards 6G
<p>Ettenhofer, Mark</p>	<ol style="list-style-type: none"> 1. Eye tracking in VR for diagnosis of neurological conditions 2. Computer vision for analysis of eye movements and pupil response in individuals with brain injuries 3. Multi-modal physiological signal processing for assessment of human performance after brain injury
<p>Eyler, Lisa T</p>	<ol style="list-style-type: none"> 1. Facilitating Expansion of the Global Aging and Geriatrics Experiments in Bipolar Disorder Database: Semi-automated Intake of Archival Clinical Datasets
<p>Gerstoft, Peter</p>	<ol style="list-style-type: none"> 1. MIMO Array Channel Sounder and Beamformer 2. Acoustic room characterization and speaker tracking with google voice
<p>Gudem, Prasad</p>	<ol style="list-style-type: none"> 1. Wireless Tracking of Boomerang Flight Trajectory Using Ultra-Wide-Band Position Location System 2. Design of Analog Circuits to Stabilize Ferroelectric Capacitors 3. Study of N-path Filters with Arbitrary Source/Load Impedances

<p>Guido K.W. Frank, MD; Mateusz Gola, PhD</p>	<p>1. Developing Virtually Reality to Treat and Understand the Neurobiology of Anorexia Nervosa</p>
<p>Harinath Garudadri (QI) & Eric Granholm (SoM), Colin Depp (SoM)</p>	<p>1. Psi-Fi Oral Interactions 2. Psi-Fi Physical Activity Monitoring 3. Psi-Fi Contextual Ecological Momentary Assessment</p>
<p>Javidi, Tara</p>	<p>1. DetecDrone 2. Active Information Acquisition</p>
<p>Kang, Mingu</p>	<p>1. Traffic Sign Recognition on FPGA with XGBoost Algorithm 2. Optimal bit-quantization and channel skipping in neural networks 3. Deep neural network accelerator with analog switched-capacitors 4. Dynamic approximate computing for deep neural network with real-time bit precision modulation in FPGA 5. Data sparsity-aware dynamic frequency modulation for deep neural network acceleration in FPGA 6. Deep neural network training under noisy devices</p>
<p>Le, Hanh-Phuc</p>	<p>1. Power Electronics for Sustainable Renewable Energy in Rural Areas</p>
<p>Lerman, Imanuel</p>	<p>1. Novel Sensing and Stimulation of Human Nerves that Encode Infection 2. Vagus Nerve Stimulation Effects on Sleep and Learning</p>
<p>Lin, Bill</p>	<p>1. Machine Learning for Real-Time Wireless and Wireline Networking Problems 2. SMT-Based Optimizations for Difficult-to-Solve Design Problems</p>
<p>Lo, Yuhwa</p>	<p>1. Viral RNA detection for virus in the environments 2. Detection of single photons for LIDAR and imaging</p>

<p>Mercier, Patrick</p>	<ol style="list-style-type: none"> 1. Ultra-miniaturized power converters for microrobotic applications 2. Wearable physiochemical sensor technologies 3. Ultra-low-power wireless communication circuits
<p>Meyer, Florian</p>	<ol style="list-style-type: none"> 1. Radar-Based Machine Perception 2. Underwater Acoustic Environmental Inversion
<p>Morris, Karcher</p>	<ol style="list-style-type: none"> 1. Design & Development of Wearable Device to Measure a Surgeon's Ergonomic Performance 2. Mixing Circuits and Python for Education 3. Educational Technologies in ECE 5 4. Bringing ECE 5 Curriculum to High School
<p>Ng, Tina</p>	<ol style="list-style-type: none"> 1. Objective assessment of motor disorder
<p>Nguyen, Truong</p>	<ol style="list-style-type: none"> 1. Autonomous Transducer Positioning System for AI-guided Scanning 2. Real-Time System for Detecting and Localizing the Vagus Nerve in Ultrasound Scans 3. Automated Visual Inspection system for Tire Defect

<p>Nuno, Vasconcelos</p>	<ol style="list-style-type: none"> 1. Natural World 3D Computer Vision 2. Long-tailed recognition of visual relationships 3. Visualization guided machine teaching 4. 3D object detection with monocular images and radar data in Autonomous driving 5. Computational Cancer ImmunoPathology 6. Multi-view machine learning for identifying underwater organisms from recorded data 7. Self-Supervised Learning for Plankton Image Classification 8. Explainable AI for self-supervised learning 9. An iterative framework for dataset collection 10. Sound source localization in 360 video 11. Fusing RGB and thermal images for improved computer vision 12. Understanding group activity in public spaces
<p>Rosing, Tajana</p>	<ol style="list-style-type: none"> 1. Accelerating bioinformatics workloads 2. Hyperdimensional computing systems design 3. Acceleration of Fully Homomorphic Encryption in PIM
<p>Schurgers, Curt</p>	<ol style="list-style-type: none"> 1. Engineers for Exploration
<p>Taswell, Carl</p>	<ol style="list-style-type: none"> 1. Wavelet-Based Algorithms for Rendering, Region-Segmenting and Path-Following in BrainWatch VR Software 2. Effect of Neurodegenerative Disease Status on Coregistration Accuracy of PET and MRI Brain Scans 3. Artificial Intelligence Methods for Concept-Similarity Detection and Matching for Brain Sciences Literature
<p>Shi, Yuanyuan</p>	<ol style="list-style-type: none"> 1. Learning to Run a Power Network in a Sustainable World

<p>Turakhia, Yatish</p>	<ol style="list-style-type: none"> 1. A GPU-accelerated library for aligning genomic long reads 2. Real-time SARS-CoV-2 phylogenetics
<p>Wang, Xiaolong</p>	<ol style="list-style-type: none"> 1. Vision-based RL for Robotics Manipulation and Control 2. Learning Explicit 3D Representation from Videos 3. Self-Supervised Learning with Videos
<p>Xie, Pengtao</p>	<ol style="list-style-type: none"> 1. Interpretable Generation of Diagnosis Reports from Medical Images 2. Multi-task Learning with Graph Neural Networks 3. Discriminative Learning of Graph Structure 4. Few-shot Multi-instance Learning 5. Automatic Medical Knowledge Graph Construction Using Deep Reinforcement Learning 6. Diversity-promoting Learning of Hierarchical Latent Space Models 7. Curriculum Determinantal Point Process for Diverse Subset Selection 8. When Gaussian Process Meets Determinantal Point Process: Learning Diverse Inducing Points 9. Curriculum Determinantal Point Process for Diverse Subset Selection
<p>Yip, Michael</p>	<ol style="list-style-type: none"> 1. Development of a Surgical Robot's User Interface 2. State estimation for autonomous suturing 3. Planning in the constrained bimanual end-effector space 4. Data efficient learning algorithms for learning from demonstrations 5. Real-to-sim Control and Learning for Automation in Surgical Manipulation

	6. Data-driven Approaches for Modeling and Control of Catheter Like Continuum Robots
Zhang, Xinyu	1. A Programmable Millimeter-Wave Massive MIMO Radio for 5G Communications and Sensing 2. Motion tracking using smart earbuds 3. Sensing Everyday Activities Using WiFi: A Machine Learning Based Framework
Zheng, Yang	1. Advanced Control and Optimization for Autonomous Vehicles in Mixed Traffic Systems

SRIP 2020 PROJECTS

FACULTY MENTOR **PROJECT TITLE**

An, Cheolhong	1. Retinal Feature extraction and tracking 2. OCT-Angiography processing for disease detection and classification 3. Real-time cell classification for the flow cytometry 4. Lensless camera: Simultaneous Depth and Scene reconstruction
Atanasov, Nikolay	1. Python Robotics 2. Power design for a quadrotor robot 3. Modeling, Simulation and Control of an Autonomous Quadrotor
Baghdadchi, Saharnaz	1. Generation of spatial polarization and phase patterns at focus 2. Fiber-based endoscopy

<p>Bharadia, Dinesh</p>	<ol style="list-style-type: none"> 1. Smartphone Enabled Ubiquitous Indoor Navigation and Mapping 2. Robust SLAM for Autonomous System by combining light-based sensing (Lidar, Camera) and RF-based sensing 3. Automotive radar perception in bad weather 4. Deep Learning driven Intelligent Nonlinear communications 5. In-Body sensing and localization of sensors 6. Sensing Driven Communication using Deep Learning 7. Autonomous monitoring and management of the spectrum 8. Securing your communication with IoT devices using device Identification 9. Bespoke FPGA Based Communication Testbed 10. Wireless virtual reality over 5G testbed 11. Smart Radio: Simultaneous communication and sensing 12. mm-accurate wireless localization for VR/AR and robotics
<p>Cosman, Pamela</p>	<ol style="list-style-type: none"> 1. Detection of conversational engagement cues 2. Eye-tracking to detect attention and distance to multiple faces 3. 360 degree video streaming
<p>Dey, Sujit</p>	<ol style="list-style-type: none"> 1. Driver's State of Mind Detection using Multiple Sensors and Machine Learning 2. Real-time Augmented Perception of Occluded Objects on moving Vehicular Camera View 3. Sustainable Wireless Communications with Optimal Utilization of Renewable Energy and Storage 4. Personalized Effect of Health Behavior on Blood Pressure: Machine Learning Based Prediction and Recommendation 5. Matching objects with large viewpoint differences
<p>Franceschetti, Massimo</p>	<ol style="list-style-type: none"> 1. Efficient deep neural networks

Gerstoft, Peter	<ol style="list-style-type: none"> 1. MIMO Array Channel Sounder and Beamformer 2. Acoustic room characterization and speaker tracking with google voice
Gilja, Vikash	<ol style="list-style-type: none"> 1. Robust neural prostheses using non-volitional activity 2. Integration of depth sensing to track hand movements for neural prosthesis experiments 3. Automation of Language Processing and Audio Classification 4. Neurally Driven Vocal Prosthesis: Vocal Production Decoding from Neural Activity
Gudem, Prasad	<ol style="list-style-type: none"> 1. 5G Based Position Location System 2. Design of Bias Circuit for Novel Negative Capacitance Field Effect Transistor (NCFET) 3. N-Path Filter 4. Fast-locking PLL design 5. Impact of FR1 5G NR Jammers on UWB System
Hall, Drew	<ol style="list-style-type: none"> 1. IC Testing 2. IC Block Design
Javidi, Tara	<ol style="list-style-type: none"> 1. DetecDrone: DRONES THAT THINK. Using AI-enabled drones to augment human vision & senses 2. Mathematical Underpinning of Information Acquisition Systems
Kim, Alicia	<ol style="list-style-type: none"> 1. Design optimization for metamaterial
Khoshabeh, Ramsin	<ol style="list-style-type: none"> 1. Not-So-Smart PCB Racer 2. Optical Blood Pressure Sensor 3. Synergistic IoT Cars
Kuzum, Duygu	<ol style="list-style-type: none"> 1. Implantable Neurodevices 2. Neuromorphic Devices for In-memory Computing
Le, Hanh-Phuc	<ol style="list-style-type: none"> 1. Power Converter for Soft Robots

Lerman, Imanuel	<ol style="list-style-type: none"> 1. Development of Focused Ultrasound Stimulation Therapy for Neuronal Diseases 2. Optically Pumped Magnetometers to Detect Peripheral Neuronal Signals 3. Vagus Nerve Stimulation Effects on Sleep and Learning
Lo, Yu-Hwa	<ol style="list-style-type: none"> 1. Microfluidic and photonic biosensors 2. Single photon detectors for sensing and imaging
Mercier, Patrick	<ol style="list-style-type: none"> 1. Magnetic Human Body Communication Systems for Next-Generation Wearables 2. Power management integrated circuits for microrobotics 3. Low-power wireless receivers for IoT applications
Meyer, Florian	<ol style="list-style-type: none"> 1. Long-Range Maritime Situational Awareness 2. Radar-Based Machine Perception
Mi, Chris	<ol style="list-style-type: none"> 1. Modeling of an extremely high power charging system for all electric airplanes 2. Modeling of the power systems of an all-electric passenger airplane
Milstein, Larry	<ol style="list-style-type: none"> 1. Spectrum Sensing using Machine Learning for Cognitive Radio
Mirarab, Siavash	<ol style="list-style-type: none"> 1. Reconstructing evolutionary distances from bits and pieces of strings 2. Expectation-Maximization (EM) algorithms for inferring ancient evolutionary times 3. Statistical models of amino acid evolution that account for biochemical properties
Ng, Tina	<ol style="list-style-type: none"> 1. Recording Repetitive Behaviors and Physiological Stress in Autism 2. Objective assessment of motor disorders 3. Understanding Cycle Life of Conducting Polymers as Anodes for High-Energy Supercapacitors

<p>Nguyen, Truong</p>	<ol style="list-style-type: none"> 1. Human-Inspired Camera Platform 2. New Feature Matching Algorithm and Applications 3. Collaborative machine vision for autonomous vehicle 4. Gaze Estimation using Multiple Sensors and Machine Learning 5. Remote Sensing Technology to Improve Community-Based Fall Risk Assessment 6. Vision-based Human Biometrics Estimation 7. ECE-centric hands-on projects demonstrating Mathematics concepts 8. Human Pose and Activity Recognition
<p>Orlitsky, Alon</p>	<ol style="list-style-type: none"> 1. Explanation and Visualization of Random Phenomena 2. Visual and Machine learning Tools for Conference Organization
<p>Schurgers, Curt</p>	<ol style="list-style-type: none"> 1. Engineers for Exploration 2. Development of educational technologies
<p>Vasconcelos, Nuno</p>	<ol style="list-style-type: none"> 1. Datasets for Natural World 3D Computer Vision 2. Long-tailed recognition of visual relationships 3. Visualization guided machine teaching 4. 3D object detection with monocular images and radar data in Autonomous driving 5. Computational Cancer ImmunoPathology 6. Reinforcement Learning for Underwater Communications 7. Classification of point cloud data 8. Biological Imaging 9. Machine Learning for Clinical Decision Support
<p>Wang, Edward</p>	<ol style="list-style-type: none"> 1. Ubiquitous Computing for Healthy Living

<p>Wang, Xiaolong</p>	<ol style="list-style-type: none"> 1. Compositional Action Recognition 2. Functional Grasping 3. Video Editing and Synthesis
<p>Xie, Pengtao</p>	<ol style="list-style-type: none"> 1. Discriminative Learning of Graph Structure 2. Few-shot Multi-instance Learning 3. When Gaussian Process Meets Determinantal Point Process: Learning Diverse Inducing Points 4. Multi-task Learning with Graph Neural Networks 5. Curriculum Determinantal Point Process for Diverse Subset Selection 6. Diversity-promoting Learning of Hierarchical Latent Space Models 7. Interpretable Generation of Diagnosis Reports from Medical Images 8. Automatic Medical Knowledge Graph Construction Using Deep Reinforcement Learning 9. Teach Machine to Pass the United States Medical Licensing Examination
<p>Yip, Mike</p>	<ol style="list-style-type: none"> 1. Development of Reinforcement Learning Environments for Surgical Robotics 2. Machine Learning for Robot Planning and Control 3. Machine Learning for Task and Motion Planning 4. Hierarchical Reinforcement Learning for real-world Robotics problems 5. Integration of Learning-based Motion Planners with standard motion planning libraries 6. Bayesian Reinforcement Learning for Needle Insertion Task In Robot Surgery 7. Surgical Robotic System Tracking within an MRI Scanner

Zhang, Xinyu	<ol style="list-style-type: none"> 1. AI-Driven 5G Networks for Connected Vehicles 2. A Programmable Millimeter-Wave Massive MIMO Radio for 5G Communications and Sensingfor 3. Sensing Everyday Activities Using WiFi: A Machine Learning Based Framework 4. Mobile Indoor Navigation Using Existing Lighting Infrastructure
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SRIP 2019 PROJECTS

**FACULTY
MENTOR**

PROJECT TITLE

Abi-Samra, Nicholas	<ol style="list-style-type: none"> 1. Tablet Application for Tracking and Analyzing Damage from Wildfires and Extreme Weather 2. Transmission line design applets 3. Distribution systems applets
An, Cheolhong	<ol style="list-style-type: none"> 1. Lensless Camera 2. ML network for Medical image analysis 3. CNN: Image sensor to color image 3. ML network to overlay metadata onto medical images
Atanasov, Nikolay	<ol style="list-style-type: none"> 1. Gazebo Simulation of a Ground-Aerial Robot Team 2. Lidar Odometry and Trajectory Tracking for an Autonomous Racecar 3. Modeling, Simulation and Control of an Autonomous Quadrotor

<p>Bae, Won</p>	<p>1. Deep Learning in Medical Imaging: Musculoskeletal Applications</p>
<p>Baghdadchi, Saharnaz</p>	<p>1. Singular imaging in turbulence 2. Endoscopic Reflectance Spectroscopy</p>
<p>Bharadia, Dinesh</p>	<p>1. Wireless Virtual Reality Headset using Deep Learning 2. All Weather Radar for Autonomous Driving 3. An app Indoor Navigation -- on smartphones 4. Wireless Virtual Reality tracking with standard glasses 5. BLE localization and communication platform 6. Helping Disaster zone using drones to identify human under the rubble</p>
<p>Cosman, Pamela</p>	<p>1. Machine learning & eye-tracking for autism assessment 2. Speech processing to detect overlap and rate</p>
<p>Cleary, Daniel</p>	<p>1. Development of neurosurgical simulations for training resident physicians</p>
<p>Deledalle, Charles</p>	<p>1. Full-Focus Image Reconstruction 2. PNG2SVG: Generating vectorial graphics from rasterized versions 3. Image restoration with bi-directional GAN priors</p>

<p>Dey, Sujit</p>	<ol style="list-style-type: none"> 1. Improving collaboration in autonomous vehicles 2. Towards On-demand Virtual Physical Therapist: Patient Performance Evaluation and Balance Ability Quantification using Multiple Sensors 3. Personalized Effect of Health Behavior on Blood Pressure: Machine Learning Based Prediction and Recommendation 4. Towards On-demand Virtual Physical Therapist: Patient Performance Evaluation and Balance Ability Quantification using Multiple Sensors 5. Personalized Effect of Health Behavior on Blood Pressure: Machine Learning Based Prediction and Recommendation
<p>Dow, Steven</p>	<ol style="list-style-type: none"> 1. Design for San Diego
<p>El Amili, Abdelkrim</p>	<ol style="list-style-type: none"> 1. Opto-electrical probes for Silicon chips testing
<p>Esmaili, Reza</p>	<ol style="list-style-type: none"> 1. Solar Charger for residential application 2. 4-Leg 3-Phase UPS System 3. Power converters and control for wind Turbine application 4. Control of Permanent Magnet Drive for Electric Car Application
<p>Garudadri, Harinath</p>	<ol style="list-style-type: none"> 1. Human Activity Classification and Quantification 2. Ambulatory Pupillometry
<p>Gerstoft, Peter</p>	<ol style="list-style-type: none"> 1. Sparse modeling and machine learning in geoscience 2. Detecting and Classifying Ships in the Ocean with Sound 3. MIMO Array Channel Sounder and Beamformer

Ghoudjehbaklou, Hassan	<ol style="list-style-type: none"> 1. Locating Oscillation Source, Using PMU Measurements 2. Multi-terminal lines impedance estimation 3. Power System Dynamic Network Reduction
Gilja, Vikash	<ol style="list-style-type: none"> 1. The Development of an Avian Model for Neurally Driven Vocal Prostheses 2. Behavioral Context Decoding from Neural Activity 3. Estimating Brain State with High-Density Electrode Grids
Gudem, Prasad	<ol style="list-style-type: none"> 1. Hawk-eye to capture flight trajectory of a boomerang 2. Non-GPS Accurate Positioning Location
Hall, Drew	<ol style="list-style-type: none"> 1. Ring-based Potentiostat 2. Integrated Circuit Testing
Hessenauer, Sam	<ol style="list-style-type: none"> 1. Blockchain AR Collectibles 2. Machine Learning on 3D protein models for Binding Sites
Hsueh, Tzu-Chien & El Amili, Abdelkrim	<ol style="list-style-type: none"> 1. Electrical and Optical Links Modeling and Budget Analyses 2. Low-Power Integrated Lidar Circuits and Systems
Kuzum, Duygu	<ol style="list-style-type: none"> 1. Neuroelectronic interfaces for brain 2. Neuro-inspired in memory computing systems
Leung, Vincent	<ol style="list-style-type: none"> 1. Wireless Power Transfer for Intra-cortical Miniaturized Distributed Brain Implant ICs 2. Design and Test of CMOS ICs for Adaptive, Energy-Optimized Wireless Brain Implant Network 3. Circuit Design for Ultra-Low-Power Radio and Ambient RF Energy Harvesting for IoT Applications
Lin, Bill	<ol style="list-style-type: none"> 1. Solving engineering problems with AlphaZero 2. Solving engineering problems with SAT and SMT solvers
Liu, Zhaowei	<ol style="list-style-type: none"> 1. 3D laser scanner

Liu, Thomas	<ol style="list-style-type: none"> 1. Studying Dynamic Brain Activity with Simultaneous EEG-fMRI 2. Deep Learning for Understanding Brain Activity 3. High Performance Functional MRI 4. Non-invasive imaging of the neurovascular system using magnetic resonance imaging (MRI)
Lo, Yu-Hwa	<ol style="list-style-type: none"> 1. Biophotonic systems for medical research 2. Image processing and machine learning for biological systems
Mi, Chris	<ol style="list-style-type: none"> 1. Battery parameter identification
Milstein, Larry	<ol style="list-style-type: none"> 1. Video Transmission over Underwater Communication Channels
Mirarabbaygi, Siavash	<ol style="list-style-type: none"> 1. New integrated algorithms for understanding microbiome 2. Solving the mystery of how human segmental duplications evolved 3. Noise reduction techniques for inferring evolutionary trees from genomic data
Ng, Tina	<ol style="list-style-type: none"> 1. Organic Short-Wavelength Infrared Photodetectors 2. Recording Motor Disorder 3. Understanding Cycle Life of Conducting Polymers as Anodes for High-Energy Supercapacitors
Nguyen, Truong	<ol style="list-style-type: none"> 1. Multi-camera calibration 2. 3D face Modeling and Reconstruction 3. Human Activity Dataset Collection and Annotation 4. Human Pose and Activity Recognition 5. 3D Scene Reconstruction for VR
Nomura, Kenji	<ol style="list-style-type: none"> 1. High speed and Highly integrated vertical

Obrzut, Sebastian	<ol style="list-style-type: none"> 1. Signal Processing of Parkinson's Disease Tremor Data from Virtual Reality Application 2. Deep Learning SPECT Medical Image Reconstruction 3. Compressive Sensing Absorber for Molecular Breast Imaging
Schurgers, Curt	<ol style="list-style-type: none"> 1. Engineers for Exploration
Seshadri, Nambi	<ol style="list-style-type: none"> 1. Machine learning for communication systems
Silberman, Jack	<ol style="list-style-type: none"> 1. Affordable Open Source Smart Wheelchair
Suresh, Preetham	<ol style="list-style-type: none"> 1. Digital Manikin (Mixed Reality Application) 2. Real time Labeled Ultrasound Reference 3. Stream Vitals into EPIC
Taswell, Carl	<ol style="list-style-type: none"> 1. Development of Algorithms for Rendering, Region-Segmenting and Path-Following in BrainWatch VR Software 2. Effect of Neurodegenerative Disease Status on Co-Registration Accuracy of PET and MRI Brain Scans 3. Automated Meta-Analyses of Dementia Literature with the SOLOMON Ontology and Nexus-PORTAL-DOORS System
Taur, Yuan	<ol style="list-style-type: none"> 1. Modeling of I-V characteristics of short-channel double-gate MOSFETs above threshold 2. Modeling of output conductance of short-channel MOSFETs in saturation
Thode, Aaron	<ol style="list-style-type: none"> 1. Embedded real-time classification of whale and noise signals on a marine mammal bioacoustic tag. 2. Design and assembly of an autonomous underwater acoustic recording system
Touri, Behrouz	<ol style="list-style-type: none"> 1. Distributed Optimization over Time-varying Graphs 2. Models of Scale-free Networks
Unpingco, Jose	<ol style="list-style-type: none"> 1. Python Package for Multivariate Imputation by Chained Equations

<p>Vasconcelos, Nuno</p>	<ol style="list-style-type: none"> 1. Image collection with drones 2. Object size estimation from one single real-world image 3. Biological Imaging 4. Self-driving and multi-task learning 5. Classification of point cloud data 6. Exploration of the impact of synthesized data for real-world computer vision problems 7. Compressed deep learning networks 8. Multi-frame visual recognition 9. Underwater microscopy
<p>Vera, David</p>	<ol style="list-style-type: none"> 1. Radiopharmacokinetic System Design
<p>Yip, Mike</p>	<ol style="list-style-type: none"> 1. Data-Efficient Reinforcement and Imitation Learning 2. Computational Motion Planning 3. Sparse Regression for Distance Estimation in Robot Configuration Space 4. Model-free control and modeling methods for muscle-powered robotics research
<p>Zhang, Xinyu</p>	<ol style="list-style-type: none"> 1. AI-Driven 5G Networks 2. Developing a Hardware Platform to Support 5G Communications and Wireless Sensing Applications 3. Sensing Everyday Activities Using WiFi: A Machine Learning Based Framework 4. An Android App for Indoor Navigation

SRIP 2018 PROJECTS

PARTICIPATING COMPANIES

COMPAN Y PROJECT TITLE

In-Q-Tel	<ol style="list-style-type: none"> 1. Secure Deep Learning 2. Classifying Synthetic Biology 3. Audio Recognition at the Edge 4. Text in Video
Kneron	<ol style="list-style-type: none"> 1. Deep learning Research on Embedded Device
Konch	<ol style="list-style-type: none"> 1. Audio and Video ML @ Konch.AI
ProductBio	<ol style="list-style-type: none"> 1. Software Engineering Internship for Sustainable Procurement Data Science Company

PARTICIPATING FACULTY

FACULTY MENTOR PROJECT TITLE

Abi-Samra, Nicholas	<ol style="list-style-type: none"> 1. Dynamic models for three ancillary services for battery energy storage systems (BESS) 2. Frequency Scan tool for subsynchronous resonance studies 3. A spatial load forecasting tool accounting for PV and EV penetration
An, Cheolhong	<ol style="list-style-type: none"> 1. Parallel lossless compression on GPU 2. Real-time GPU Database and Interactive Visualization 3. CNN: Image sensor to color image
Atanasov, Nikolay	<ol style="list-style-type: none"> 1. Build a robot from scratch and make it move!
Baghdadchi, Saharnaz	<ol style="list-style-type: none"> 1. Trapping and manipulating particles with highly focused beams

	2. Imaging through scattering using spatially encoded optical beams
Bandaru, Prabhakar (MAE)	1. Electrical characteristics, and quantum capacitance of two-dimensional materials 2. Thermal characteristics of graphene, for device applications
Cosman, Pam	1. Using eye-tracking glasses to quantify looks in social interactions
Cosman, Pam and Taswell, Carl	1. Development of Algorithms for Rendering, Region-Segmenting and Path-Following in BrainWatch VR Software
Cubukcu, Ertugrul	1. Two-dimensional optical antennas
Depp, Colin	1. Brief mobile intervention for suicide prevention in the community
Garudadri, Hari	1. Multisensory stimulus to promote executive function and motor competence 2. High density, high resolution, wireless wearable EEG
Gerstoft, Peter	1. Sparse modeling and machine learning in geoscience 2. MIMO Array Processing for Atmospheric Duct Detection
Hylton, Todd	1. A smart camera using predictive machine learning
Jaffe, Jules	1. Enabling Real-Time Video Control Underwater via an LED Communications Array 2. Nano-AUV Low Cost Microscopy and Sensing
Javidi, Tara	1. Real-time Object detection and Tracking for Self-driving Cars, Assistive Drones, and Smart Homes 2. Drone formations for wireless connectivity 3. From Smart Cities to Connected Vehicles

Khoshabeh, Ramsin	<ol style="list-style-type: none"> 1. PiB: Learning Python 2. PiB: iOS App Development 3. PiB: Augmented Reality 4. PiB: Android App Development 5. PiB: Artificial Intelligence 6. Intelligent Whiteboard Capture with ML 7. Intelligent Whiteboard Capture API
Kleinfeld, David (Physics)	<ol style="list-style-type: none"> 1. Few GHz pulse counter for PMT output
Kuzum, Duygu	<ol style="list-style-type: none"> 1. Deep Neural Nets for Biophysical Modeling of Brain Networks 2. Neuromorphic systems for unsupervised learning 3. Implatable Neurodevices for Probing Brain Circuits
Leung, Vincent	<ol style="list-style-type: none"> 1. Enabling a Wireless Communication Network of Brain Implants 2. Develop a hands-on Wireless Communication Project based on NI's SDR Platform
Liu, Zhaowei	<ol style="list-style-type: none"> 1. High speed optical imaging
Lo, Yu-Hwa	<ol style="list-style-type: none"> 1. Detection of single photons 2. Wearable medical devices for detection of blood flow and cardio output 3. 3D imaging flow cytometer and cell sorter
Milstein, Larry	<ol style="list-style-type: none"> 1. Machine Learning for Cognitive Radio
Mi, Chris	<ol style="list-style-type: none"> 1. Wireless Charging of Multiple Mobile Devices Over a Large Distance
Ng, Tina	<ol style="list-style-type: none"> 1. Recording Repetitive Behaviors in Autism 2. Polymer photodiode for infrared spectrum

<p>Nguyen, Truong</p>	<ol style="list-style-type: none"> 1. Camera Systems for 3D Scene Reconstruction 2. Transmission of Touch VR 3. High quality free viewpoint video generation
<p>Schurgers, Curt</p>	<ol style="list-style-type: none"> 1. Engineers for Exploration
<p>Silberman, Jack</p>	<ol style="list-style-type: none"> 1. UC San Diego Smart Open Source Wheelchair 2. UCEMBDEV (University of California Embedded Systems Development Testbed for Robotics) 3. UCESCR (University of California San Diego Electronic Speed Controller for Robotics)
<p>Taur, Yuan</p>	<ol style="list-style-type: none"> 1. Modeling of MOSFET output conductance in the saturation region
<p>Vasconcelos, Nuno</p>	<ol style="list-style-type: none"> 1. Image collection with drones 2. Deep learning to measure image quality 3. Deep Learning for Object Size Estimation from Real World Images 4. Using synthetic data for training deep learning systems 5. Efficient Deep Learning for Drones and Smart Phones 6. The role of context in object detection 7. Deep Learning for Biological Imaging 8. Multi-frame visual recognition 9. Synthesize hand gesture sequences for deep learning 10. Action prediction in videos using Convolutional Neural Networks
<p>Yip, Mike</p>	<ol style="list-style-type: none"> 1. Snake robot for colonoscopy 2. Reinforcement Learning in OpenAI Gym 3. Automating Robotic Surgery
<p>Yu, Angela</p>	<ol style="list-style-type: none"> 1. Computational Modeling of Human Face Processing

Zhang, Xinyu	<ol style="list-style-type: none"> 1. An Android App for Indoor Navigation 2. Sensing heart rate using WiFi 3. Enabling 5G Mobile Wireless Networks At Scale 4. A Hardware Platform to Support 5G Communications and Wireless Sensing Applications
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SRIP 2017 PROJECTS

FACULTY MENTOR	PROJECT TITLE	STUDENT INTERNS
Abi-Samra, Nicholas	<ol style="list-style-type: none"> 1. Consolidating Solar Resource Data Sets for the USA (primary objective) and globally (secondary objective) 2. Analyze PV Impacts on several distribution feeders 3. Produce a tool to assess the impact of increased electric vehicles (EVs) on distribution transformers and failure risk 	<ol style="list-style-type: none"> 1. Yash Ranjan & Haoran Wang (Undergrads) 2. Hamna Khan & Martin Magno (Undergrads) 3. Yi Hui Chen & Ali Jafrani (Undergrads)
Atanasov, Nikolay	<ol style="list-style-type: none"> 1. Build a Quadrator from Scratch 	<ol style="list-style-type: none"> 1. Siwei Guo (MS)
Bandaru, Prabhakar (MAE)	<ol style="list-style-type: none"> 1. Synthesis and characterization of defect-free graphene for electronics 	<ol style="list-style-type: none"> 1. Yi Shen Ooi & Abhijeet Pasumarthy (MS)

Bott-Suzuki, Simon	1. A multiple output digital delay module for diagnostic timing	1. Camille Lee & Christian Perez Castanaza (Undergrads)
Cosman, Pam	1. Image/video color and visibility restoration 2. Predicting video packet importance	1. Vivian Meng & Yalun Zheng (Undergrads) 2. Mehmet Can Hucumenoglu, Shivika Pathania & Ankitesh Singh (MS)
Cubukcu, Ertugrul	1. Monolayer Photonics	1. Xiaojie Zhang (MS)
Dow, Steven (Cog Sci) and Don Norman (ECE/Cog Sci/Psych)	1. Enabling Crowdsourced Visualizations to Support Large-Scale Civic Engagement	1. Justin Tran (Undergrad), Yikun Huang (MS)
Garudadri, Hari	1. Hardware design for a wearable, realtime, open speech platform 2. Quantifying degree of abnormality in movement tasks by Parkinson Disease (PD) patients 3. Wearable EEG Sensor 4. Rady Glove Project 5. Embedded Programming	1. Rui Han & Ningwei Li (Undergrads) 2. Krishna Chaithanya Vastare (MS) 3. Yuxuan Liu (Undergrad), Jingyi Yang (MS) 4. Yiyu Zhu (Undergrad), Yifeng Bu (MS) 5. Simon Fong, Andrew Yoo & Hendry Joe (Undergrads)
Gerstoft, Peter	1. Compressive and sparse methods in acoustic/EM signal processing	1. Shashankar Sudarsan (MS)
Ghoudjehbaklou, Hassan	1. Estimating dynamic parameters of Distributed Energy Resource (DER) models	1. Kevin Abler (Undergrad)

<p>Gilja, Vikash</p>	<ol style="list-style-type: none"> 1. Neural Signal Processing Swiss Army Knife 2. Semi-automated system for labeling patient behavior 	<ol style="list-style-type: none"> 1. Stephen Estrin (Undergrad) 2. Kenny Chen & Chenghao Gong (Undergrads)
<p>Javidi, Tara</p>	<ol style="list-style-type: none"> 1. Real-time Object detection and Tracking for Self-driving Cars, Assistive Drones, and Smart Homes 2. From Smart Cities to Connected Vehicles 3. Design Prototyping Software for Artists 	<ol style="list-style-type: none"> 1. Bharat Kambalur (MS) 2. Govind Gopal & Weijia Wang (MS) 3. Kavya Putluri (MS), Yizhou Hao (Undergrad), Chenhua Shi (Undergrad)
<p>Khoshabeh, Ramsin and Raul Pegan</p>	<ol style="list-style-type: none"> 1. IoT, Data Analytics, Computer Vision, and More... 2. Glasses-free 3D and Reconstruction from Stereo 	<ol style="list-style-type: none"> 1. Abhiram Iyer (Undergrad), Keith Yu (Undergrad), Akash Agrawal (MS)
<p>Kreutz-Delgado, Ken</p>	<ol style="list-style-type: none"> 1. Digital Neuromorphic Implementation of Deep Neural Networks 	<ol style="list-style-type: none"> 1. Ian Colbert (Undergrad)
<p>Kuzum, Duygu</p>	<ol style="list-style-type: none"> 1. Modeling Brain Circuits 	<ol style="list-style-type: none"> 1. Zhuoran Gu & Leon Nguyen (MS)
<p>Liu, Zhaowei</p>	<ol style="list-style-type: none"> 1. Instrument for stroke therapy 2. LED based Li-Fi communication 	<ol style="list-style-type: none"> 1. Yixiong Li 2. Joseph Kadifa (Undergrad), Tiansong Zhang (MS)
<p>Lo, Yu-Hwa</p>	<ol style="list-style-type: none"> 1. Biomedical devices and systems for point of care and precision medicine 	<ol style="list-style-type: none"> 1. Xingyu Huang & Rui Tang (MS)

<p>Maralani, Ayden</p>	<ol style="list-style-type: none"> 1. Transistor Design and Simulation 2. Transistor Characterization and Modeling 3. SOI CMOS IC Design and Simulation 4. Power Converter Design and Simulation 	<ol style="list-style-type: none"> 1. Jack Harms (Undergrad), Samuel Harms (Undergrad), Ping-Chien Lee (MS) 2. Joshua Cho (Undergrad) 3. Zhongzhong Dong & Wenxuan Zhang (Undergrads) 4. Johnny Wang (Undergrad)
<p>Mi, Chris</p>	<ol style="list-style-type: none"> 1. A Wireless Charging System for Electric Vehicles 	<ol style="list-style-type: none"> 1. Haili Cai (Undergrad)
<p>Mirarab, Siavash</p>	<ol style="list-style-type: none"> 1. New methods for inference of unbalanced phylogenetic trees 	<ol style="list-style-type: none"> 1. Shenghao Jiang (Undergrad)
<p>Ng, Tina</p>	<ol style="list-style-type: none"> 1. Short-Wavelength Infrared Photodiodes Based on Modular Tunable Conjugated Polymers 	<ol style="list-style-type: none"> 1. Rong Xi (Undergrad)
<p>Nguyen, Truong</p>	<ol style="list-style-type: none"> 1. Multimodal Denoising Autoencoders 2. Human/hand pose estimation using machine learning 3. 3D reconstruction system using RGB-D camera 4. Testbed for free viewpoint indoor touring system 5. Optimal design of a microgrid considering 	<ol style="list-style-type: none"> 1. Anirudh Ravichandran (MS) 2. Nan Jiang (MS) 3. Shiyuan Huang (Undergrad), Zhongjian Zhu (MS) 4. Nasrin Enayatzadeh (Undergrad), Seyedehelham Sadatian (Undergrad), Chih-yin Kan (MS) 5. Shayan Ghaderi & Khai Tran (Undergrads) 7. Chen Du (MS)

	<p>uncertain energy market parameters</p> <p>6. Real-time Texturing in Free Viewpoint Video</p> <p>7. Image and Video Defencing</p>	
Pal, Piya	<p>1. Blind Deconvolution and Super resolution Imaging</p>	<p>1. Anthony Haas & Yikun Xu (MS)</p>
Vasconcelos, Nuno	<p>1. Fast face/hand detection and tracking for gesture video</p> <p>2. Light-weight CNN for pose estimation in gesture video</p> <p>3. Facial landmark localization with deep learning</p> <p>4. Image collection with drones</p> <p>5. Real-time object detection on drones</p> <p>6. Biological imaging</p>	<p>1. Harshirta Mangal (MS), Akshaya Purohit (MS)</p> <p>2. Yuhan Chen (Undergrad), Hao Jiang (MS), George Ma (MS)</p> <p>3. Yang Zhang (MS)</p> <p>4. Amir Persekian (Undergrad)</p> <p>6. Xinxin Chen (Undergrad)</p>
Yip, Mike	<p>1. Haptics for minimally invasive robotic surgery</p> <p>2. Learning robot locomotion via reinforcement learning</p> <p>3. MRI-safe robot design and image-based control</p> <p>4. Reducing tumor resection margins via natural medical image overlays through wireless augmented reality headsets</p>	<p>1. Guangyan Shen (Undergrad), Mayur Bency (MS)</p> <p>2. Ojash Neopane (Undergrad)</p> <p>3. Andrew Saad & Dimitri Schreiber (Undergrads)</p> <p>4. Yuqi Zhang (MS)</p>
Yu, Angela	<p>1. Predicting human decision-making using mouse</p>	<p>1. Jianling Liu (Undergrad), Girish Bathala (MS)</p>

	tracking and eye blink rate monitoring	
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