2021 Virtual ISUR Research Expo April 20 – 22 on Compass2g

The Grainger College of Engineering Illinois Scholars Undergraduate Research (ISUR) program is a structured two-semester mentored research experience with a research learning community. The program facilitates opportunities to expand students' academic experience beyond the walls of the traditional classroom. Through the learning-by-apprenticeship model, students become familiar with research methodologies, develop their research skills, are exposed to what graduate school entails, and gain experience needed for graduate school acceptance or research in industry. The following programs are included in ISUR: Clare Boothe Luce Research Program, DaRin Butz Foundation Research Program, C3SR-Undergraduate Research in Artificial Intelligence, and Semiconductor Research Corporation Undergraduate Research Program.

Bird-inspired Morphing Wings: Design and Experimental Evaluation of a Wing Folding Mechanism for Pitch Stability Control
Anna Alvarez, Senior, Mechanical Engineering, ENG

Diabetes-Linked Peripheral Arterial Disease - Landmarks and Therapies
Yamenah Ambreen, Junior, Bioengineering, ENG

Effect of Glycosaminoglycans on the Immune Response and Vasculature Formation in Mineralized Collagen Scaffolds
Angela Andrada, Senior, Chemistry, LAS

Process Intensification Approaches for Improved CO2 Electroreduction
Daniel Azmoodeh, Senior, Chemical Engineering, ENG

Tissue Engineering Platforms to Investigate Therapeutic Resistance of Glioblastoma
Joe Boyce, Junior, Materials Science & Engineering, ENG

Predicting Stock Prices Using Machine Learning Models
Abhi Chebiyam, Sophomore, Electrical Engineering, ENG

Label-Free Tissue Histopathology Using Infrared Spectroscopic Imaging
Jaime Chen, Junior, Bioengineering, ENG

27-Hydroxycholesterol Promotes Breast Cancer Recurrence from Dormancy
Joy Chen, Senior, Bioengineering, ENG

RokWall: Privacy Preserving COVID-19 Status Cards
Nicholas Chen, Senior, Computer Science, ENG

A 3D Tissue Engineered Model of Endometrial Vessel Networks
Noah Chiou, Sophomore, Bioengineering, ENG

Carbenoid-Boronate Building Blocks Enable Iterative Assembly of Saturated Small Molecules
Sriyankari Chitti, Senior, Chemistry, LAS

Early Detection of Sepsis Through Sensor Integrated Wearable Device
Sanjana Chunduri, Sophomore, Computer Engineering, ENG

Performance of Alkyl-Borane Healing Chemistry in Polymers for Composite Applications
Ian Flueck, Junior, Materials Science & Engineering, ENG

Early Detection of Sepsis Through Sensor Integrated Wearable Device
Saloni Garg, Sophomore, Computer Engineering, ENG

Using Alternative Indicators to Identify Damage with the Impact-Echo Method of Non-Destructive Evaluation
Matt Grendzinski, Senior, Civil Engineering, ENG

Quantification of Osteointegration in Curvilinear 3D Printed Bone Scaffolds
Nellie Haug, Senior, Mechanical Engineering, ENG

Portable Pathogen Diagnostics Using Microfluidic Cartridges Made from Additive Manufacturing
John Heredia, Senior, Bioengineering, ENG

Doping of Electrodeposited Lithium Cobalt Oxide Cathodes for Lithium-ion Batteries
Omar Kazi, Senior, Electrical Engineering, ENG

Bugs as Drugs: Engineering Commensal Bacteria for Therapeutic Delivery
Shweta Khorana, Junior, Bioengineering, ENG

Library for University Distance Instruction
Liana Koleva, Sophomore, Electrical Engineering, ENG

Discrete Generative Modeling via ClusterVAE's
Jeffrey Lai, Senior, Engineering Physics, ENG

PolyWorld: A Touch and Voice Multimodal Interaction Method for Personalizing Voice Assistants
Jaewook Lee, Junior, Computer Science, ENG

Extending CSRA: A Peer Reviewer Recommendation System for Scientific Literature
Toby Liang, Junior, Computer Science, ENG

Sparse Matrix Multiplication Kernels
Aneesh Lodhavia, Junior, Computer Science, ENG

Polymer Free Methods to Transfer Chemical Vapor Deposition (CVD) Grown Graphene
Amanda Loutris, Junior, Materials Science & Engineering, ENG

Tuning the Properties of Ceramic Glazes for Coral Larval Recruitment
Eliza Lovrich, Sophomore, Bioengineering, ENG

Optimization of Bimetallic Catalyst Synthesis to Select for Desirable Material Characteristics
Melissa Manetsch, Junior, Chemical Engineering, LAS

Functional Stability of Extracellular Vesicles and Cellular Response Determined by Fluorescence Lifetime Imaging Microscopy
Elisabeth Martin, Junior, Bioengineering, ENG

Deep Reinforcement Learning for IoT Network Optimization
Aashna Mehta, Sophomore, Computer Science, ENG

Genetic Tool Development for Metabolic Engineering of Yeast Rhodosporidium Toruloides
Andrea Mejia, Junior, Chemical Engineering, LAS

Influence of Solids Loading and Water Content on Yttria-Stabilized Zirconia (YSZ) Aerogels
Jordan Meyer, Junior, Materials Science & Engineering, ENG

Novel Signal Fusion for 3D Classification
Harris Mohamed, Senior, Computer Engineering, ENG

Optimizing Sparse Matrix Multiplication For Neural Networks
Samraj Moorjani, Sophomore, Computer Science, ENG

Developing a Non-static Biomaterial System for Hematopoietic Stem Cell Culture
Ali Nunes, Junior, Materials Science & Engineering, ENG

Analysis of Variation (ANOVA) of an Additively Manufactured Metal Material
Nicholas O'Brien, Senior, Mechanical Science & Engineering, ENG

Nanoparticle Detection Using Portable Photonic Crystal Enhanced Microscopy (P-PCEM)
Ege Onal, Junior, Bioengineering, ENG

High-Throughput Analysis Reveals Microenvironmental Regulation of Primary Human Liver Sinusoidal Endothelial Cell Phenotype
Daniel Owen, Junior, Bioengineering, ENG

Supercooled Droplet Impact on Superhydrophobic Surfaces
Andrew Pelster, Senior, Aerospace Engineering, ENG

Generating High-Amplitude THz Fields for Ultrafast, Nonlinear Optical Experiments
Andrea Perry, Senior, Engineering Physics, ENG

Characterization of Bioink and Fabrication of Curvilinear Bone Scaffolds
Arielle Pfeil, Senior, Mechanical Engineering, ENG

Investigating the Effect of Compositional Factors in Collagen Scaffolds on hMSC Differentiation Along an Osteoblastic Lineage
Maxwell Polanek, Sophomore, Chemical Engineering, LAS

Targeting Infected Host Cells in vivo via ROS Responsive Azido-Sugar
Jarron Roy, Senior, Bioengineering, ENG

Characterizing the Rheology of Cementitious Material for the Development of a Standard Reference Material (SRM) for Concrete
Lauren Schissler, Junior, Civil Engineering, ENG

Investigation of the Structural and Electrical Evolution of Lanthanum Strontium Manganate Thin Films during Crystallization
Joshua Simpson-Gomez, Junior, Materials Science & Engineering, ENG

Screening for Gene Expression Fluctuations Reveals Latency Promoting Agents of HIV
Harpal Singh, Senior, Bioengineering, ENG

Implementing an Equation of State with Baryon Number, Strangeness and Electric Charge
Lydia Spychalla, Junior, Engineering Physics, ENG

Early Detection of Sepsis Through Sensor Integrated Wearable Device
Kavya Sudhir, Sophomore, Bioengineering, ENG

Vision Modules for Online Intelligent Learning Assistant (CELA)
Xinglong Sun, Junior, Computer Engineering, ENG

Individual Motors Apply Small Forces to Bypass Roadblocks on Hindered Pathways
Nikhila Swarna, Senior, Engineering Physics, ENG

Hybrid Algal-Carbonate Substrates for Enhanced Coral Reef Restoration
Haley Tholen, Senior, Engineering Mechanics, ENG

Smarter Data Pipelining for High-Complexity Deep Learning Recommender Systems
Nikash Walia, Sophomore, Computer Science, ENG

Evaluating Image Compression Performance
James Wei, Junior, Computer Science, ENG

Early Detection of Sepsis Through Sensor Integrated Wearable Device
Trisha Yadav, Sophomore, Computer Engineering, ENG

Ternary Diboride Thin Films for Extreme Environments
Dana Yun, Junior, Materials Science & Engineering, ENG

CELA: An AI Assistant Tool for Online Learning
Jiarui Zhang, Senior, Computer Science, ENG

Engagement Recognition Module Investigation of the Online Learning Advisor CELA
Jason Zhu, Junior, Computer Engineering, ENG