

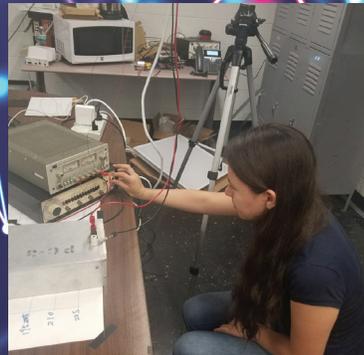
NJIT

New Jersey Institute
of Technology

Tenth International Undergraduate Summer Research Symposium

Thursday, July 27, 2017







10th International Undergraduate Summer Research Symposium

Thursday, July 27, 2017

Agenda

- Poster Session 1 – 9:30-11:30 a.m.**
- Welcome Remarks & Lunch – 11:30-12:30 p.m.**
- Poster Session 2 – 12:30-2:30 p.m.**
- Closing Remarks – 2:30 p.m.**

Symposium Coordinator: Ms. Angela Retino
McNair Program Coordinator: Ms. Zara Williams

Thank you to the sponsors:

- | | | |
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Achievement Program | Pfeiffer Foundation | NJIT Office of Research |
| | James Stevenson
and Family Foundation | |



PROVOST UNDERGRADUATE SUMMER RESEARCH

Basma Abukwaik (*Biology*) 1-1

Research: *Telehealth: Increasing Awareness of Health Care Access*
Faculty Adviser: Yvette Wohn, Department of Information Systems

John Badiola (*Biomechanical Engineering*) 1-2

Research: *Role of Reactive Oxygen Species: Examination of Adrenergic and Cholinergic Neuron Apoptosis in Mild Traumatic Brain Injury and Alcohol Abuse*
Faculty Adviser: James Haorah, Department of Biomedical Engineering

Adam Bindas (*Chemical Engineering*) 1-3

Research: *Computational Modeling of Impeller Power Dissipation in Pharmaceutical Reactors for API Manufacturing under Different Baffling Conditions*
Faculty Adviser: Piero Armenante, Department of Chemical, Biological and Pharmaceutical Engineering

Connor Cattafe (*Biology*) 1-4

Research: *Bioengineering Populus Spp.: An Experiment to Improve Hyperaccumulation of Heavy Metals for Phytoremediation*
Faculty Advisers: Daniel Bunker, Department of Biological Sciences; Edward Kirby and Miguel Cervantes-Cervantes, Department of Biological Sciences, Rutgers University-Newark

Rebecca Cestaro (*Digital Design*) 1-5

Research: *Real-Time Gamification Simulation for Fitness Evaluation*
Faculty Adviser: Augustus Wendell, College of Architecture and Design

Daniel Deboer (*Biomechanics*) 1-18

Research: *Trimethylamine-N-Oxide and its Effect on Cholesteryl Ester Transfer Proteins*
Faculty Adviser: Cristiano Dias, Department of Physics

Akash Dontamsetty (*Biomedical Engineering*) 1-19

Research: *Validation of a Modified In-Vitro Axonal Injury System*
Faculty Adviser: Bryan Pfister, Department of Biomedical Engineering

Karina Dsouza (*Biophysics*) 1-20

Research: *Observing Microtubules' Vibrational Properties in Micrometer Channels*
Faculty Adviser: Camelia Prodan, Department of Physics

Eman Elgouz (*Chemical Engineering*) 1-21

Research: *Graphene Oxide as a Drug Delivery Vehicle*
Faculty Adviser: Somenath Mitra, Department of Chemistry and Environmental Science

Amira Feknous (*Electrical Engineering*) 2-13

Research: *Measurement and Study of the Possible Influence of the Electromagnetic Field of the Earth on an Electromagnetic Dipole of the Human Heart*
Faculty Advisers: Oksana Manzhura and Edip Niver, Department of Electrical and Computer Engineering

Marco Fernandez (*Civil Engineering*) 2-14

Research: *Structural Evaluation of a Timber Pile Retrofit System*
Faculty Advisers: Matthew J. Bandelt and Matthew P. Adams, Department of Civil and Environmental Engineering

Ricardo Garcia (*Biomedical Engineering*) 2-1

Research: *Comorbid Effect of Alcohol and HIV-1 Viral Proteins on Brain Cell-to-Cell Interactions*
Faculty Adviser: James Haorah, Department of Biomedical Engineering

Yasmine Ghattas (*Biology and Chemistry*) 2-2

Research: *Feedback Control of Social Behavior*
Faculty Adviser: Eric Fortune, Department of Biological Sciences

Inderdeep Grewal (*Civil Engineering*) 2-3

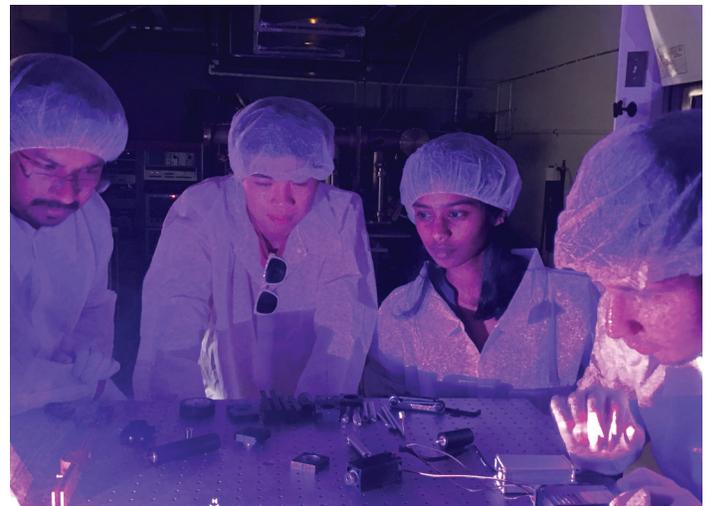
Research: *Study of Micro-Seismic Events Due to Water Injected from the Hydraulic Fracturing of Granite in Enhanced Geothermal Systems*
Faculty Adviser: Bruno Gonçalves da Silva, Department of Civil and Environmental Engineering

Debanjan Haldar (*Biomedical Engineering*) 2-4

Research: *Studies on the Biomarker Identification in Blood and CSF in Rat Model of Blast-induced Traumatic Brain Injury*
Faculty Advisers: Venkata R. Kakulavarapu and Namas Chandra, Department of Biomedical Engineering

Patricia Iglesias Montoro (*Biomedical Engineering*) 2-12

Research: *Peptide Hydrogels for Neural Regeneration*
Faculty Adviser: Vivek Kumar, Department of Biomedical Engineering



Key: (session number – table number) For example: (2 – 13) is session 2, table number 13

Amin Jassim (*Mathematical Biology*) 2-5

Research: *Optimizing Parameters to Produce Coherent Motor Output from a Locomotion Network Model*

Faculty Advisers: Casey Diekman, Department of Mathematical Sciences; Gal Haspel, Department of Biological Sciences

Yuanqi Jiang (*Information Systems*) 2-6

Research: *Developing Online Commenting and Gamification for Engaging Students in a Participatory Learning System*

Faculty Adviser: Michael Bieber, Department of Information Systems

Joshua Katz (*Computer Science*) 2-7

Research: *Estimating Ionospheric Parameters Using Real-Time Data Sources*

Faculty Advisers: Andrew Gerrard and Nathaniel Frissell, Department of Physics

Soojin Kim (*Biomedical Engineering*) 2-8

Research: *Characterization of Decellularized Porcine Pancreatic Extracellular Matrix*

Faculty Adviser: Alice Eun Jung Lee, Department of Biomedical Engineering

Julianna Kosty (*Biomedical Engineering*) 2-9

Research: *Behavioral Analysis of Moderate Traumatic Brain Injury*

Faculty Adviser: Bryan Pfister, Department of Biomedical Engineering

Cassidy Lavine (*Industrial Design*) 2-10

Research: *Environmentally Benign, Low-Cost and Innovative Compact Food Composter Housing for the Household*

Faculty Adviser: Jose Alcala, College of Architecture and Design

David Liptsyn (*Biology*) 2-15

Research: *Mathematical Modeling of Cooperative Singing Behavior in the Plain-tailed Wren*

Faculty Adviser: Eric Fortune, Department of Biological Sciences

Leidy Manzueta (*Civil Engineering*) 2-16

Research: *Generation of Tunable Nanobubbles for Sustainable Agricultural and Environmental Applications*

Faculty Advisers: Wen Zhang and Taha Marhaba, Department of Civil and Environmental Engineering

Austin Mathew (*Biomedical Engineering*) 2-17

Research: *Development of a 3D-Bioprinted Microfluidic Scaffold for Improved Cell Growth and Migration and Chemical Delivery*

Faculty Adviser: Roman Voronov, Department of Chemical, Biological and Pharmaceutical Engineering

Tracey Mraw (*Biomedical Engineering*) 2-18

Research: *Dynamic Brain Connectivity in Pediatric Stroke Patients*

Faculty Adviser: Bharat Biswal, Department of Biomedical Engineering

Saloni Patel (*Biomedical Engineering*) 2-19

Research: *Dental Pulp Regeneration Using Novel Self-Assembling Peptide Scaffolds*

Faculty Adviser: Vivek Kumar, Department of Biomedical Engineering

Adriano Peña (*Electrical Engineering*) 2-13

Research: *Measurement and Study of the Possible Influence of the Electromagnetic Field of the Earth on an Electromagnetic Dipole of the Human Heart*

Faculty Advisers: Edip Niver and Oksana Manzhura, Department of Electrical and Computer Engineering

Satchel Quinn (*Information Technology*) 2-20

Research: *Virtualizing Presence: Measuring the Impact of Virtual Reality Presence on Working Memory*

Faculty Adviser: Augustus Wendell, College of Architecture and Design

Joel Rajah (*Biomedical Engineering*) 2-21

Research: *Instrumentation and Data Analysis Code to Assess the Underlying Neural Mechanism of Vision Therapy to Improve Vision in Children with Concussion*

Faculty Adviser: Tara Alvarez, Department of Biomedical Engineering

Armani-Christian Roxas (*Chemical Engineering*) 2-25

Research: *Surface Stresses Induced by Polycyclic Aromatic Hydrocarbon Condensation on Carbon Surface: Molecular Dynamics Simulation*

Faculty Adviser: Gennady Gor, Department of Chemical, Biological and Pharmaceutical Engineering

Diana Rubulotta (*Mechanical Engineering*) 2-26

Research: *Experimental Evidence of Topological Edge Modes*

Faculty Adviser: Alokik Kanwal, Department of Physics

Ayushi Sangoi (*Biomedical Engineering*) 2-27

Research: *Modifying Amplitudes of Various Acoustics Using Novel Patterns*

Faculty Advisers: Kyle Dobiszewski, Albert Dorman Honors College; Camelia Prodan, Department of Physics

Niyam Shah (*Civil Engineering*) 2-28

Research: *Can We Use Spiky Sweetgum Seed Shells as Bio Adsorbents or Biofilters for the Removal of Water Contaminants?*

Faculty Adviser: Wen Zhang, Department of Civil and Environmental Engineering

Shivani Shah (*Business*) 2-24

Research: *Blockchain Technology and its Applications in Container Shipping Logistics*

Faculty Adviser: Junmin (Jim) Shi, Martin Tuchman School of Management

Mehtab Sidhu (*Computer Science and Math*) 2-23

Research: *Modeling and Optimization of MapReduce-based Scientific Workflows for Big Data Analytics*

Faculty Adviser: Chase Q. Wu, Department of Computing Sciences

Parth Sojitra (*Electrical Engineering*) 2-22

Research: *Design, Analysis and Applications of Strange Attractor Circuit Dynamics*

Faculty Adviser: Denis L. Blackmore, Department of Mathematical Sciences

Migle Surblyte (*Computer Science*) 2-33

Research: *Efficient Processing of Lattice-light Sheet Microscopy Data for Visualization*

Faculty Adviser: Roman Voronov, Department of Chemical, Biological and Pharmaceutical Engineering

Sahla Syed (*Chemical Engineering*) 2-53

Research: *Nanoparticle-based Insulin Formulation for Oral Delivery*

Faculty Adviser: Xiaoyang Xu, Department of Chemical, Biological and Pharmaceutical Engineering

Prasanna Tati (*Biology*) 2-11

Research: *Optimizing Bacterial Fermentation to Isolate Biomethane from Disposed Food and Organic Material for Renewable Energy*

Faculty Adviser: Jay N. Meegoda, Department of Civil and Environmental Engineering

Vinaya Thadhani (*Biomedical Engineering*) 2-36

Research: *Collaborative Research in Computational Neuroscience: Innovative Approaches to Science and Engineering Research on Brain Function*

Faculty Adviser: Bharat Biswal, Department of Biomedical Engineering

Tristan Thompson (*Biochemistry*) 2-37

Research: *Purification of HuPTHRI via Fusion to Spore Coat Protein*

Faculty Adviser: Edgardo Farinas, Department of Chemistry and Environmental Science

Ulysess “Bo” Thompson (*Computer Science*) 2-43

Research: *Gamifying Spaced Repetition for Teaching Programming Languages*

Faculty Adviser: Michael Lee, Department of Information Systems

Anton Venediktov (*Mechanical Engineering*) 2-44

Research: *Mechanics Toward a Sustainable Environment: Effects of UV Exposure on the Mechanical Behavior of Polylactic Acid*

Faculty Adviser: Shawn Chester, Department of Mechanical and Industrial Engineering

Ali Yuksel (*Electrical Engineering*) 2-45

Research: *Quantum Dots Embedded in High Efficiency Visible Light-Emitting Diodes Grown by Molecular Beam Epitaxy for Smart Lighting Applications*

Faculty Adviser: Hieu P. T. Nguyen, Department of Electrical and Computer Engineering



Vatsal Shah (*Mechanical Engineering*) 2-46

Research: *Automation of Stem Cell Migration and Growth Control Using Electronically-Actuated Microfluidic Devices*

Faculty Adviser: Roman Voronov, Department of Chemical, Biological and Pharmaceutical Engineering

RONALD E. MCNAIR ACHIEVEMENT PROGRAM

Mirana Alam (*Electrical Engineering*) 1-6

Research: *Conformal Micro Patch RF Antenna*

Faculty Adviser: Haim Grebel, Department of Electrical and Computer Engineering

John Alexiades (*Computer Engineering*) 1-7

Research: *Embedded GPU Platform for Spike-Based Hand-Written Digit Classification*

Faculty Adviser: Bipin Rajendran, Department of Electrical and Computer Engineering

Emily Almeida (*Chemical Engineering*) 1-8

Research: *3D Bioprinting of Vascular Networks Using Hydrogels*

Faculty Adviser: Murat Guvendiren, Department of Chemical, Biological and Pharmaceutical Engineering

Faustin Arevalo (*Chemical Engineering*) 1-9

Research: *Spray-drying of Griseofulvin Nanosuspensions and Solutions for Preparation of Nanocomposites and Amorphous Solid Dispersions: Comparative Assessment of Drug Release*

Faculty Adviser: Ecevit Bilgili, Department of Chemical, Biological and Pharmaceutical Engineering

John Brito (*Chemical Engineering*) 1-10

Research: *Manual Labeling of Cells*

Faculty Adviser: Roman Voronov, Department of Chemical, Biological and Pharmaceutical Engineering

Joshua Coronel (*Biomedical Engineering*) 1-11

Research: *Patterning Nanofibrous Electrospun Mats Using Electric Field Focusing Techniques*

Faculty Adviser: Treena Arinzeh, Department of Biomedical Engineering

Mateusz Kalata (*Electrical Engineering*) 1-12

Research: *Kinetic Human Control Interface for a Surrogate Robot*
Faculty Adviser: Cong Wang, Department of Electrical and Computer Engineering

Matias Maidana (*Biomedical Engineering*) 1-13

Research: *Virtual Simulation of a Robotic Exoskeleton for Gait Analysis and Optimization*
Faculty Adviser: Saikat Pal, Department of Biomedical Engineering

Jorge Pereyra (*Chemical Engineering*) 1-14

Research: *Hierarchical Patterning through the Combination of Photomasks and Swelling in Hydrogels with Gradient Crosslinking Density*
Faculty Adviser: Murat Guvendiren, Department of Chemical, Biological and Pharmaceutical Engineering

Raymon Saadalla (*Computer Engineering*) 1-12

Research: *Kinetic Human Control Interface for a Surrogate Robot*
Faculty Adviser: Cong Wang, Department of Electrical and Computer Engineering

NATIONAL SCIENCE FOUNDATION (NSF) RESEARCH EXPERIENCES FOR UNDERGRADUATES (REU) - COMPUTATIONAL DATA ANALYTICS FOR ADVANCING HUMAN SERVICES

Doucina Elqaisi (*Mechanical Engineering - Bergen Community College*) 1-36

Research: *BreastCancer.Org: A Content Analysis of Social Media Use of Patients and Their Families*
Faculty Adviser: Songhua Xu, Department of Information Systems

Nicolette Filppone (*General Science and Mathematics, Bergen Community College*) 2-29

Research: *Predicting Colorectal Cancer Risk from Whole Exome Sequence Data*
Faculty Adviser: Usman Roshan, Department of Computer Science

Joseph Gatto (*Computer Science - County College of Morris*) 2-30

Research: *Stacking vs. Deep Learning*
Faculty Adviser: Usman Roshan, Department of Computer Science

Jaouad Mouloud (*Information Technology - Bergen Community College*) 2-31

Research: *Genopsis: Web Server for Estimating Cancer Risk Based on SNPs Genotype Data*
Faculty Adviser: Usman Roshan, Department of Computer Science

Stephanie Matson (*Biomedical Engineering - Raritan Valley Community College*) 1-36

Research: *BreastCancer.Org: A Content Analysis of Social Media Use of Patients and Their Families*
Faculty Adviser: Songhua Xu, Department of Information Systems

Katie Parnell (*Information Technology - Hofstra University*) 1-51

Research: *Customer Churn Prediction for Supermarkets*
Faculty Adviser: Lian Duan, Department of Information Systems

Priscilla Pintado (*Accounting - Hunter College*) 1-51

Research: *Customer Churn Prediction for Supermarkets*
Faculty Adviser: Lian Duan, Department of Information Systems

Luis Rizo (*Computer Science - LaGuardia Community College*) 1-36

Research: *BreastCancer.Org: A Content Analysis of Social Media Use of Patients and Their Families*
Faculty Adviser: Songhua Xu, Department of Information Systems

Steven Valencia (*Computer Science - Raritan Valley Community College*) 2-32

Research: *Disease Risk Prediction*
Faculty Adviser: Zhu Wei, Department of Computer Science

Yong Zhou (*Computer Science - LaGuardia Community College*) 1-51

Research: *Customer Churn Prediction for Supermarkets*
Faculty Adviser: Lian Duan, Department of Information Systems

NSF REU - ENGINEERING RESEARCH CENTER FOR STRUCTURED ORGANIC COMPOSITES

Jeremiah Castro (*Chemical Engineering*) 1-48

Research: *Effect of Mixing Process Parameters on CQA/CPA of Strip Film*
Faculty Adviser: Rajesh Dave, Department of Chemical, Biological and Pharmaceutical Engineering

Joseph Forte (*Chemical Engineering*) 2-51

Research: *Convection Drying of Oral Strip Films*
Faculty Adviser: Rajesh Dave, Department of Chemical, Biological and Pharmaceutical Engineering

John Pentangelo (*Chemical Engineering*) 2-47

Research: *Effect of Casting Techniques on Critical Material Attributes of Strip Films*
Faculty Adviser: Rajesh Dave, Department of Chemical, Biological and Pharmaceutical Engineering

NSF REU – EXTREEMS-QED

Patricia Bobila (*Mathematical Sciences*) 1-37

Research: *Quadrature Rules for Singular or Nearly Singular Integrals in Three Dimensions*
Faculty Advisers: Michael Siegel and David Horntrop, Department of Mathematical Sciences

Salvatore Cordaro (*Mathematical Sciences*) 1-37

Research: *Quadrature Rules for Singular or Nearly Singular Integrals in Three Dimensions*
Faculty Advisers: Michael Siegel and David Horntrop, Department of Mathematical Sciences

Matthew Illingworth (*Mathematical Sciences*) 2-56

Research: *Numerical Methods for Solving the Monge-Ampere Equation*

Faculty Adviser: Brittany Froese, Department of Mathematical Sciences

Ivan Mitevski (*Electrical Engineering*) 2-56

Research: *Numerical Methods for Solving the Monge-Ampere Equation*

Faculty Adviser: Brittany Froese, Department of Mathematical Sciences

Paulo Paz (*Mathematical Sciences*) 1-37

Research: *Quadrature Rules for Singular or Nearly Singular Integrals in Three Dimensions*

Faculty Advisers: Michael Siegel and David Hornthrop, Department of Mathematical Sciences

David Youssif (*Mathematical Sciences*) 2-56

Research: *Numerical Methods for Solving the Monge-Ampere Equation*

Faculty Adviser: Brittany Froese, Department of Mathematical Sciences

NSF REU - FUSION OF DATA AND POWER

Matthew Petrula (*Electrical Engineering*) 1-50

Research: *A Fast Internet to Control Energy Delivery in a Digital Power Grid*

Faculty Adviser: Roberto Rojas-Cessa, Department of Electrical and Computer Engineering

Haard Shah (*Computer Science*) 1-50

Research: *A Fast Internet to Control Energy Delivery in a Digital Power Grid*

Faculty Adviser: Roberto Rojas-Cessa, Department of Electrical and Computer Engineering

NSF REU - NANOTECHNOLOGY

Jolene Cobb (*Physics - Siena College*) 1-33

Research: *Fabrication of Hybrid Scaffolds with Airbrushing and Additive Manufacturing*

Faculty Adviser: Murat Guvendiren, Department of Chemical, Biological and Pharmaceutical Engineering

Victoria Harbour (*Chemical Engineering*) 2-42

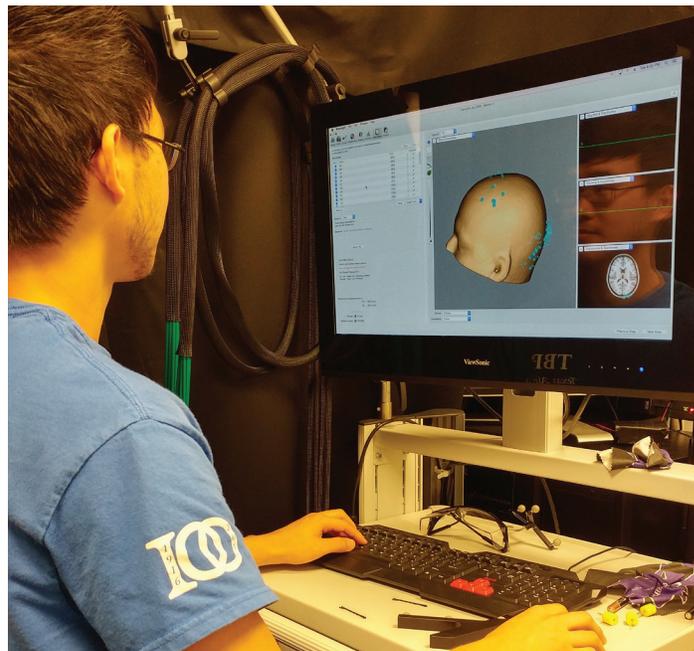
Research: *Organ-on-Chip: Microfluidic In Vitro, NVU Model*

Faculty Adviser: Sagnik Basuray, Department of Chemical, Biological and Pharmaceutical Engineering

Monica Torralba (*Chemical Engineering*) 2-41

Research: *Nanoporous Flow-Through Capacitive Electrode Biosensor*

Faculty Adviser: Sagnik Basuray, Department of Chemical, Biological and Pharmaceutical Engineering



NSF REU - OPTICS AND PHOTONICS: TECHNOLOGIES, SYSTEMS, AND DEVICES

Briana Hackos (*Biophysics*) 1-28

Research: *Antibacterial Disinfection in the Presence of Light from 2D and 3D Nanostructures*

Faculty Adviser: Sagnik Basuray, Department of Chemical, Biological and Pharmaceutical Engineering

Johanna Lopez-Benitez (*Electrical Engineering*) 1-27

Research: *Circular Retroreflector-Based Visible Light Indoor Positioning*

Faculty Advisers: Edwin Hou and Abdallah Khreishah, Department of Electrical and Computer Engineering

Benjamin November (*Physics and Molecular Engineering - University of Chicago*) 1-26

Research: *Effect of Co-Catalysts and Surface Area on Efficiency of Silicon Photoelectrodes for Water Splitting in Photoelectrochemical Cells*

Faculty Adviser: Yong Yang, Department of Chemistry and Environmental Science

Dylan Renaud (*Applied Physics and Math*) 1-25

Research: *A New Imaging Technology: Development of Spectral Domain Doppler Phase Microscopy*

Faculty Adviser: Xuan Liu, Department of Electrical and Computer Engineering

Luke Saladis (*Electrical Engineering - St. Cloud State University*) 1-24

Research: *Convolutional Neural Networks for Digital Image Forensics*

Faculty Adviser: Yun-Qing Shi, Department of Electrical and Computer Engineering

Juan Salinas (*Electrical Engineering - Oklahoma State University*) 1-23

Research: *User-Friendly Dynamic Network Topology Display for Network Testing and Troubleshooting*

Faculty Advisers: Abdallah Khreishah and Nirwan Ansari, Department of Electrical and Computer Engineering

Anumeena Sorna (*Electronics and Computer Engineering - National Institute of Technology*) 1-22

Research: *Design and Characterization of 265nm Deep-Ultraviolet Nanowire-Based Light-Emitting Diodes*

Faculty Adviser: Hieu P. T. Nguyen, Department of Electrical and Computer Engineering

Tristan Ventura (*Computer Engineering - Rutgers University*) 1-15

Research: *Multi-Platform Optics and Photonics Educational Application with User Data Analytics*

Faculty Advisers: John Carpinelli and Abdallah Khreishah, Department of Electrical and Computer Engineering

Miles Wang (*Electrical Engineering - Harvard University*) 1-16

Research: *Towards Ultra-Cheap Electronics: Paper-based Colloidal Quantum Dot Photodetectors*

Faculty Adviser: Dong Ko, Department of Electrical and Computer Engineering

Jerry Shih-Ming Wang (*Electrical Engineering - University of Texas*) 1-17

Research: *Testing Functional Brain Alterations for Visual Attention-Processing Between Young Adults with Primary Attention Deficit Hyperactivity Disorder and Traumatic Brain Injury*

Faculty Adviser: Xiaobo Li, Department of Biomedical Engineering

NSF - COMMUNITY COLLEGE BIOMATHEMATICAL RESEARCH INITIATION PROGRAM (C2BRIP)

Alexis Brice (*Electrical Engineering*) 1-34

Research: *Mathematical Modeling of a Central Nervous System Catecholaminergic Cell Line*

Faculty Advisers: Casey Diekman, Department of Mathematical Sciences; Jorge Golowasch, Department of Biological Sciences; Chengwen Wang, Department of Mathematical Sciences, Essex County College

Mahamadi Compaore (*Engineering - Essex County College*) 1-34

Research: *Mathematical Modeling of a Central Nervous System Catecholaminergic Cell Line*

Faculty Advisers: Casey Diekman, Department of Mathematical Sciences; Jorge Golowasch, Department of Biological Sciences; Chengwen Wang, Department of Mathematical Sciences, Essex County College

Michael Edwin (*Engineering - Essex County College*) 1-35

Research: *Mathematical Modeling of a Central Nervous System Catecholaminergic Cell Line*

Faculty Adviser: Casey Diekman, Department of Mathematical Sciences; Jorge Golowasch, Department of Biological Sciences; Chengwen Wang, Department of Mathematical Sciences, Essex County College

Serge Fopposi (*Mathematics - Essex County College*) 1-35

Research: *Mathematical Modeling of a Central Nervous System Catecholaminergic Cell Line*

Faculty Advisers: Casey Diekman, Department of Mathematical Sciences; Jorge Golowasch, Department of Biological Sciences; Chengwen Wang, Department of Mathematical Sciences, Essex County College

Alyssa Marie Maquiling (*Mathematics - Essex County College*) 1-35

Research: *Mathematical Modeling of a Central Nervous System Catecholaminergic Cell Line*

Faculty Advisers: Casey Diekman, Department of Mathematical Sciences; Jorge Golowasch, Department of Biological Sciences; Chengwen Wang, Department of Mathematical Sciences, Essex County College

Alfonso Mazzoni (*Civil Engineering - Essex County College*) 2-34

Research: *Mathematical Modeling of a Central Nervous System Catecholaminergic Cell Line*

Faculty Advisers: Casey Diekman, Department of Mathematical Sciences; Jorge Golowasch, Department of Biological Sciences; Chengwen Wang, Department of Mathematical Sciences, Essex County College

Edwin Mwallo (*Electrical Engineering - Essex County College*) 2-34

Research: *Mathematical Modeling of a Central Nervous System Catecholaminergic Cell Line*

Faculty Advisers: Casey Diekman, Department of Mathematical Sciences; Jorge Golowasch, Department of Biological Sciences; Chengwen Wang, Department of Mathematical Sciences, Essex County College

Ralph Erickson Suarez (*Engineering - Essex County College*) 2-34

Research: *Mathematical Modeling of a Central Nervous System Catecholaminergic Cell Line*

Faculty Advisers: Casey Diekman, Department of Mathematical Sciences; Jorge Golowasch, Department of Biological Sciences; Chengwen Wang, Department of Mathematical Sciences, Essex County College

Mohamed Traore (*Mechanical Engineering - Essex County College*) 2-35

Research: *Mathematical Modeling of a Central Nervous System Catecholaminergic Cell Line*

Faculty Advisers: Casey Diekman, Department of Mathematical Sciences; Jorge Golowasch, Department of Biological Sciences; Chengwen Wang, Department of Mathematical Sciences, Essex County College

Daquan Wright (*Computer Science - Essex County College*) 2-35

Research: *Mathematical Modeling of a Central Nervous System Catecholaminergic Cell Line*

Faculty Advisers: Casey Diekman, Department of Mathematical Sciences; Jorge Golowasch, Department of Biological Sciences; Chengwen Wang, Department of Mathematical Sciences, Essex County College

U.S. ARMY ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER, PICATINNY ARSENAL

James Brancale (*Computer Science*) 1-41

Research: *Software Development for a Multi-Spectral Camera*

Faculty Advisers: John Federici, Ian Gatley and Sam Gatley, Department of Physics

John Hawkins (*Physics and Computer Science*) 2-40

Research: *3D-Printing and Embedded Computing*

Faculty Advisers: John Federici and Sam Gatley, Department of Physics

Lydia Hong (*Industrial Design*) 2-39

Research: *Additive Manufacturing in Mortar Weapons Systems*

Faculty Advisers: John Federici and Sam Gatley, Department of Physics

N.J. SPACE GRANT CONSORTIUM SUMMER RESEARCH

Brian Algalaba (*Engineering Physics - Ramapo College*) 1-40

Research: *3D Printing and Embedded Computing*

Faculty Advisers: John Federici and Sam Gatley, Department of Physics

Chris Barbieri (*Engineering Physics - Ramapo College*) 1-39

Research: *Additive Manufacturing in Mortar Weapons Systems*

Faculty Advisers: John Federici and Sam Gatley, Department of Physics

George Willms (*Physics*) 1-38

Research: *Angle-Dependent Reflectance of Common Building Materials for Remote Sensing Technologies*

Faculty Adviser: Benjamin Thomas, Department of Physics

BIOMEDICAL ENGINEERING

Sugosh Anur (*Biomedical Engineering*) 2-38

Research: *Embryonic Stem Cell Viability in Peptide Hydrogels*

Faculty Advisers: Alice Eun Jung Lee and Vivek Kumar, Department of Biomedical Engineering

Christopher Morris (*Biomedical Engineering*) 1-42

Research: *Anatomical Differences Due to Gender as a Cause for Differing Rates of Traumatic Brain Injury During Blunt Impacts*

Faculty Adviser: Bryan Pfister, Department of Biomedical Engineering

HERITAGE INSTITUTE OF TECHNOLOGY – NJIT SUMMER RESEARCH

Aihik Banerjee (*Biotechnology*) 1-56

Research: *Examination of Acute Neuronal Plasma Membrane Damage After Blast-Induced Traumatic Brain Injury in Animals Using Fluorescent Tracer*

Faculty Adviser: Namas Chandra, Department of Biomedical Engineering

Samalee Banerjee (*Biotechnology*) 1-55

Research: *An Investigation of Binding Affinity of Growth Factors on Glycosaminoglycans-mimetic Scaffolds for Cartilage Tissue Engineering*

Faculty Adviser: Treena Arinzeh, Department of Biomedical Engineering

Mehma Kaur Chawla (*Biotechnology*) 1-54

Research: *Development of Cholesterol-Lowering Peptide Drug*

Faculty Adviser: Vivek A. Kumar, Department of Biomedical Engineering

Raunak Das (*Electronics and Communication Engineering*) 1-53

Research: *Integration of Asymmetric and Aggregated Li+ WiFi Systems*

Faculty Adviser: Abdallah Khreishah, Department of Electrical and Computer Engineering

Tulika Das (*Applied Electronics and Instrumentation Engineering*) 1-52

Research: *SeNCE – Shear-Enhanced Nanoporous Capacitive Electrodes*

Faculty Adviser: Sagnik Basuray, Department of Chemical, Biological and Pharmaceutical Engineering

Shreya Ghosh (*Electronics and Communication Engineering*) 1-43

Research: *SDN Simulation Testbed Setup and Improvement*

Faculty Adviser: Abdallah Khreishah, Department of Electrical and Computer Engineering



Anisha Gupta (*Computer Science and Engineering*) 1-44
Research: *Spiking Neural Circuit for Tracking an Isotherm*
Faculty Adviser: Bipin Rajendran, Department of Electrical and Computer Engineering

Happy Kumar (*Electrical and Electronics Engineering*) 1-45
Research: *Investigation of Instability and Ion Drift in Commercial Thin Film Cd-Te Photovoltaic Modules*
Faculty Adviser: Alan Delahoy, Department of Physics

Aakash Saha (*Biotechnology*) 1-46
Research: *Piezoelectric Characterization of a Degradable ZnO Oxide Composite Scaffold for Tissue Engineering Applications*
Faculty Adviser: Treena Arinzeh, Department of Biomedical Engineering

Jasleen Sekhon (*Computer Science and Engineering*) 1-47
Research: *Eliciting Worker Preference for Improved Task Completion in Crowdsourcing*
Faculty Adviser: Senjuti Basu Roy, Department of Computer Science

**CENTER FOR INJURY BIOMECHANICS,
MATERIALS & MEDICINE (CIBM3)
UNDERGRADUATE SUMMER RESEARCH**

Aihik Banerjee (*Biotechnology*) 1-56
Research: *Examination of Acute Neuronal Plasma Membrane Damage After Blast-Induced Traumatic Brain Injury in Animals Using Fluorescent Tracer*
Faculty Adviser: Namas Chandra, Department of Biomedical Engineering

Michael Dolegiewitz (*Biomedical Engineering*) 2-9
Research: *Behavioral Analysis of Moderate Traumatic Brain Injury*
Faculty Adviser: Bryan Pfister, Department of Biomedical Engineering

Jeffrey Kim (*Biomedical Engineering*) 1-30
Research: *Investigating the Pressure Field of the Exit of Shock Tube; Incident and Total Pressure*
Faculty Advisers: Namas Chandra and Maciej Skotak, Department of Biomedical Engineering

Julianna Kosty (*Biomedical Engineering*) 2-9
Research: *Behavioral Analysis of Moderate Traumatic Brain Injury*
Faculty Adviser: Bryan Pfister, Department of Biomedical Engineering

Sainithin Kuntamukkala (*Biomedical Engineering*) 2-56
Research: *The Effects of Blast Trauma on IBA-1 and NLRP4 Protein Expression*
Faculty Advisers: Namas Chandra and Venkata R. Kakulavarapu, Department of Biomedical Engineering

Melissa Mendez-Nguyen (*Biomedical Engineering*) 1-30
Research: *Investigating the Pressure Field of the Exit of Shock Tube; Incident and Total Pressure*
Faculty Advisers: Namas Chandra and Maciej Skotak, Department of Biomedical Engineering

Sohum Pandey (*Biomedical Engineering*) 1-31
Research: *Wave Propagation Under Shock Loads*
Faculty Adviser: Namas Chandra, Department of Biomedical Engineering

Yonathan Sheer (*Biomedical Engineering*) 2-55
Research: *Biochemical Sequela in the Auditory Cortex Following Blast Exposure*
Faculty Advisers: Rama Rao and Namas Chandra, Department of Biomedical Engineering

Madison Taylor (*Biomedical Engineering*) 2-54
Research: *Blood Brain Barrier Breakdown Following Blast-Induced Neurotrauma*
Faculty Advisers: Namas Chandra and Rama Rao, Department of Biomedical Engineering

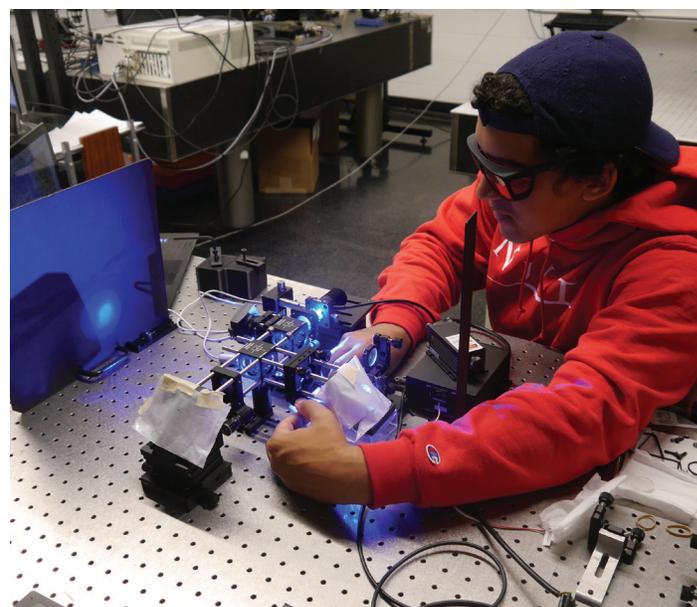
Jonathan Ziner (*Biomedical Engineering*) 1-32
Research: *Cavitation as a Mechanism for Blast Traumatic Brain Injury*
Faculty Advisers: Namas Chandra and Maciej Skotak, Department of Biomedical Engineering

LEAN STARTUP ACCELERATOR PROGRAM

Christina De Ramos (*Industrial Engineering*) 1-29
Research: *Thermaware*
Faculty Adviser: Michael Ehrlich, Martin Tuchman School of Management

Mansha Kohli (*Finance*) 2-52
Research: *Orca*
Faculty Adviser: Michael Ehrlich, Martin Tuchman School of Management

Antonio Mistretta (*Human Computer Interaction*) 2-52
Research: *Orca*
Faculty Adviser: Michael Ehrlich, Martin Tuchman School of Management





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