

Announcement

2023 NJIT URI Undergraduate Summer Research and Innovation Program

Dr. James F. Stevenson Innovation Awards for Undergraduate Students

and

**New Undergraduate Student Members of the National Academy of Innovators
(NAI) Chapter at NJIT Student Innovator and Inventor Club (SI2C)**

NJIT 2025 Strategic Plan emphasizes on providing undergraduate students an outstanding education integrated with research and innovation experience to enable them to succeed and take leadership roles in the society. The Undergraduate Research and Innovation (URI) program has evolved as a significant part of the interdisciplinary education, research and innovation experience at NJIT. The URI website <http://centers.njit.edu/uri/> summarizes undergraduate research and innovation opportunities with information about resources and competitions.

The 2023 NJIT Undergraduate Summer Research and Innovation Symposium was held on July 26-27, 2023. About 155 undergraduate students presented their summer research work to the URI External Advisory Board, faculty, and students. The URI External Advisory Board (EAB) judged all student presentations and selected three top project presentations for Dr. James F. Stevenson Innovation Awards Prizes and 5 Honorable Mentions, one from each of the five research cluster areas: Bioscience and Bioengineering, Data Science and Management, Environment and Sustainability, Material Science and Engineering, and Robotics and Machine Intelligence and Architecture and Design. In addition, based on the research and innovation merit of the projects the URI EAB nominated 59 students for the membership of the National Academy of Innovators Chapter at NJIT Student Innovator and Inventor Club (SI2C). Listing of Student Winners and Inductees of the NAI-NJIT Chapter Student Innovator and Inventor Club (SI2C) is provided below. These students will be inducted to SI2C at the NAI-NJIT Chapter SI2C Student Member event in Fall 2023 (to be announced).

**Dr. James F. Stevenson Innovation Award Winners from the 2023 URI
Summer Research and Innovation Symposium**

Dr. James F. Stevenson Innovation Award: First Prize (\$1,000)

Name: Stuti Mohan

Department: BME/SAET

Project Title: Identifying a Novel Concussion Metric through Foot Tapping Measurement

Faculty Advisor: Chang Yaramothu

URI Program: URI Provost Summer Research Fellowship Program

Dr. James F. Stevenson Innovation Award: Second Prize (\$750)

Name: Melisa Bilgili

Department: Chemical and Materials Engineering

Project Title: Computational Analysis of N8 Stabilized Isolated Single Metal Atom Catalysts for Electrochemical Reduction of CO₂

Faculty Advisor: Joshua Young

URI Program: URI Provost Summer Research Fellowship Program

Dr. James F. Stevenson Innovation Award: Third Prize (\$500)

Name: Rituja Bhattacharya

Department: Electrical and Computer Engineering

Project Title: Trajectory Clustering Analysis for Modelling Human Hand Motion Skills in Robotics

Faculty Advisor: Dr. Cong Wang

URI Program: Heritage Institute of Technology (HIT) Summer Research

Dr. James F. Stevenson Innovation Award: Honorable Mention - Bioscience and Bioengineering (\$100)

Name: Anushri Gupta

Department: Biomedical Engineering

Project Title: Evaluation of Hydrogel Scaffolds for Myocardial Regeneration

Faculty Advisor: Dr. Vivek A. Kumar

URI Program: Heritage Institute of Technology (HIT) Summer Research

Dr. James F. Stevenson Innovation Award: Honorable Mention - Data Science and Management (\$100)

Name: Kevin Diggs

Department: Computer Science

Project Title: Soundly Detecting Memory Leaks in the Linux Kernel

Faculty Advisor: Martin Kellogg

URI Program: URI Provost Summer Research Fellowship Program

Dr. James F. Stevenson Innovation Award: Honorable Mention - Environment and Sustainability (\$100)

Name: Hannah Shahinian

Department: Department of Chemistry and Environmental Science

Project Title: Mercury Sorption in Propanotrophs

Faculty Advisor: Dr. Lijie Zhang

URI Program: NSF Research Experience of Undergraduate (REU) Program for BioSensor Materials for Advanced Research and Technology (BIOSMART) at the Environment/Biotechnology Nexus

Dr. James F. Stevenson Innovation Award: Honorable Mention - Material Science and Engineering (\$100)

Name: Maryom Rahman

Department: Chemical and Materials Engineering

Project Title: Manufacturing a State-of the-Art Selector Valve for a Miniature Peptide Synthesizer

Faculty Advisor: Sagnik Basuray

URI Program: NSF Research Experience of Undergraduate (REU) Program for Cancer Diagnosis and Therapeutic Intervention

Dr. James F. Stevenson Innovation Award: Honorable Mention - Robotics and Machine Intelligence (\$100)

Name: Vignesh Nethrapalli

Department: Department of Informatics

Project Title: Improving Caption Data Diversity via Mood-Amplification for Audio-Language Tasks

Faculty Advisor: Mark Cartwright

URI Program: Honors Summer Research Institute (HSRI)

New Student Members of the National Academy of Inventor (NAI) Chapter at NJIT Student Innovation and Inventor Club (SI2C)

First Name	Last Name	Major	Title of Project
Faith	Adams	Biomedical Engineering	Investigating EDC-Crosslinked Collagen Scaffolds for Use in Skeletal Muscle Regeneration
Bryan	Aguilar	Biochemistry	Protein Engineering Using Directed Evolution for Bioremediation
Omar	Al-Zaman	Biology	Synthesis and Characterization of Ruthenium Based Photosensitizer Compounds
Edem	Ammamoo	Biology (Pre-Med)	Use Of Machine Learning Models to Predict Cancer
Amina	Anowara	Chemical and Biological Engineering	Porous Hydrogels As A Transducer Material In Microfluidic Electrochemical Cells
Colin	Arcaro	Electrical Engineering	Understanding the Impact of Solar, Magnetospheric, and Terrestrial Weather on the Ionosphere
Poulami	Basu	Computer science engineering	Traffic Forecasting with Vehicle-Centric Data and Advanced GNN-LSTM Models
Rituja	Bhattacharya	Electronics and Communication Engineering	Trajectory Clustering Analysis for Modelling Human Hand Motion Skills in Robotics
Melisa	Bilgili	Chemical Engineering	Computational Analysis of N8 Stabilized Isolated Single Metal Atom Catalysts for Electrochemical Reduction of CO ₂

Don	Bonifacio Jr.	Computer Engineering	Tax Fraud Detection Using a Machine Learning Approach
XingZhi (Gigi)	Chen	Chemistry	Investigation of Electrochemical Degradation of PFOA Using High Surface Area Electrodes
Marissa	Christenson	Biomedical Engineering	3D Muscle Shape Reconstruction to Establish the Relationship Between Muscle Shape and Function
Evan	Correa	B.S. Biology	Investigating the Effect of Optogenetically Activating Dmrt3a in Larval Zebrafish
Austin	Dalton	Applied Physics	Analysis of Environmental Dependence of the HODI Instrument Calibrations
Annalyse	Dickinson	Physics	Investigation of the Relationship Between Mini-Filament Eruptions, Small-Scale Magnetic Flux Ropes, and Coronal Ejections, and Their Distribution in Relation to Coronal Holes
Kevin	Diggs	Computer Science	Soundly Detecting Memory Leaks in the Linux Kernel
Anushka	Dixit	Biochemistry	Applying Ultrafast Protein Digestion in Microdroplets to Hydrogen-Deuterium Exchange Mass Spectrometry (HDX-MS)
Nikita	Dubinin	Financial Technology	"Blockchain Technology and its Applications in Plastic Recycling Industry Supply Chain
Fatimah	El-Belkasi	Forensic Science	The Implications of Visual Stimuli on Conferencing Platforms
Sabastian	Fernandes	Applied Physics	Doppler Residuals on High Frequency Radio Signals
Chelsea	Garcia	Mechanical Engineering	Accounting for Mechanical Behavior of Skin to Minimize Harvested Skin Area in Skin Grafting

First Name	Last Name	Major	Title of Project
Shayna	Gentiluomo	Chemistry	Chemical Vapor Deposition as a Method of Synthesis for Titanium-carbide MXenes
Arin	Ghose	Computer Science & Engineering	Large Language Models For Predicting Functional Genetic Variant Candidates
Rohan	Ghosh	Electronics and Communication Engineering	Optical Properties of PbS and PbS/CdS Core-Shell Semiconductor Quantum Dots
Oliwia	Gorska	Biology	Epigenetic Signatures for age-at-death estimation in human remains
Anushri	Gupta	Biotechnology	Evaluation of Hydrogel Scaffolds for Myocardial Regeneration
Steven	Habeb	Biology	"The Effect of Perfluorooctanesulfonic Acid (PFOS) on the Ovary
Allison	Harbolic	Biology	Identifying the Distribution of Nanoplastics in Mouse Placenta
Elizabeth	Hervias	Chemical Engineering	Electrospun PVDF Nanofibers for Early Cancer Detection via Acoustic Wave Sensing
Michelle	Jojoy	Biology	Effects of Nanoplastics on Gene Expression in the Placenta
Mrunmayi	Joshi	Biology, Mathematical Sciences	Dural Electrical Stimulation to Motor Cortex after Fluid Percussion Injury Results in Motor Function Improvement
Yousuf	Kanan	Computer Science	Enhancing Graph Features for Improved Roadway Speed Prediction Using GNN and LSTM with Vehicle-Connected Data
Nathaniel	Kapleau	Physics and Computer Science	Magnetohydrodynamic Simulation of Coronal Magnetic Field Evolution and Eruption
Daniel	Kidon	BME	Traumatic Brain Injury Simulating Blasting Device Characterization
Jeremy	Kurian	Computer Science	Simulating Patient Behavior with Machine Learning Algorithms: The Case of an Ottoman Mental Institution
Adam	Leszczynski	Chemical Biology	Adsorption Behavior of PFAS to Microplastics
Emily	Luo	Computer Science	Predicting Solar Flare Indices from SHARP Parameter Dynamics using Convolutional Neural Networks
Arman	Manookian	Physics	Solar Prominences
Sebastian	Mattio-Smith	Chemical Engineering	Stabilization of Lithium-Silicon Battery for Energy Storage
Melissa	Mello	Chemical Engineering	Designing Metal Fuels for Custom Thermite Compositions
Stuti	Mohan	Biomedical Engineering	Identifying a Novel Concussion Metric through Foot Tapping Measurement
Aliza	Mujahid	Biomedical Engineering	Enhancing Skin Grafting Efficiency: A New Method for Estimating Skin Expansion Ratio Based on Skin's Geometric and Mechanical Properties
Laila	Nashir	Chemistry	Reactivity of Gaseous Mercuric Bromide with Solid and Liquid Interfaces
Vignesh	Nethrapalli	Computer Science + Math	Improving Caption Data Diversity via Mood-Amplification for Audio-Language Tasks

First Name	Last Name	Major	Title of Project
Ellison	O'Grady	Mathematical Sciences (conc. Applied Mathematics)	Chaotic Scattering of Vortex Dipoles
Naya	Pared	Applied Physics	Trigger Mechanisms for Solar Flares
Alex	Patchedjiev	Computer Science	Roman Street Shrine Database and Querying Interface
Siya	Patel	Biology BS	Characterization of Apoptotic Peptides to Attack Triple Negative Breast Cancer
Riya	Patel	Biomolecular Science	Integrated electronics to mimic tumor cell response to electrical stimulations
Disha	Patil	Biomedical Engineering	Using DTI to Study Changes in White Matter Tracts in the Brain to Identify Mild TBI
Pia	Piazzzi	Materials Engineering	Complete Rheological Characterization of Concentrated Emulsions
Nicole	Piccininni	Biology	Investigation of Polymer Nanoparticles for Drug Delivery
Maryom	Rahman	Chemical Engineering	Manufacturing a State-of-the-Art Selector Valve for a Miniature Peptide Synthesizer
Varsha Rao	Rayasam	Biology	Nanobubbles-enabled foam fractionation for efficient algal removal
Marina	Seefen	Chemical Engineering	Novel MXene-Based Electrified Surface Coatings for Antiviral Air Filtration
Sohom	Sen	Computer Science and Engineering	Live SMPLX Model Control and Its Applications
Hannah	Shahinian	Environmental Science	Mercury Sorption in Propanotrophs
Ana	Sierra-Maldonado James Abraham (co-presenter)	Chemistry	Fabrication of 2D TMDs based FET sensors for the detection of Per- and Polyfluoroalkyl Substances
Vijay	Subramanian	B.S. Biology	Does mitochondrial DNA activate immune responses during TB infection?

Congratulations to all student winners and their faculty advisors!
