

INDIAN INSTITUTE OF TECHNOLOGY, KANPUR

CENTRE FOR CONTINUING EDUCATION

Students-Undergraduate Research Graduate Excellence



SURGE 2022

Annual Report

TABLE OF CONTENT

Content	Page
Message from Head, CCE	3
SURGE Program- An overview	4
SURGE-2022 Awards	5
SURGE Funding	7
SURGE-2022 IITK Participants	11
SURGE-2022 Non-IITK Participants	20
SURGE-2022 SAARC Participant	24
Acknowledgement	25
SURGE-2022 Mentors	26
SURGE-2022 Batch Photograph	27

Message from Head, Centre for Continuing Education

Dear Colleagues/students,

Greetings of the day!

At the outset I sincerely want to congratulate all the SURGE-2022 participants and our faculty members who mentored the SURGE-2022 participants in producing exceptional quality research work at IIT Kanpur.

I take this opportunity to bring to the notice of all that SURGE-2022 program was a great success, albeit the same has been conducted on online mode. The success of this program is purely attributed to enthusiastic and excellent work of the SURGE participants, dedicated faculty mentors of IIT Kanpur, the generous financial support provided by our illustrious alumni and the efficient coordination of CCE staff.

It is pertinent to mention here that this year a total number of 1480 applications were received for SURGE-2022 internship from IITK, Non-IITK and students SAARC countries. Among these 232 students including one student of Nepal (under SAARC category) had successfully completed the internship.

Further, for motivating and inculcating the competition among the SURGE participants, SURGE also provides awards to the selected SURGE participants under the following categories, which carries a cash award and commendation certificate;

(i) Dr. Elizabeth and Dr. Verkey Cherian Award, (ii) Best Project Award for Engineering and (iii) Best Project Award for Sciences.

This year 10 participants were selected and awarded under the aforementioned categories.

I sincerely thanks to the DORA for supporting the program, mentors for providing opportunity to the SURGE-2022 participants to work on their project and to the Evaluation Committee Members for helping us in the selection of awardees, for making this internship successful.

Thank you!

Prof. BV Rathish Kumar

Head, Centre for Continuing Education

SURGE PROGRAM – AN OVERVIEW

Students-Undergraduate Research Graduate Excellence (SURGE) program, is an approved internship Program of IIT Kanpur, which runs under the aegis of Centre for Continuing Education (CCE), IIT Kanpur. This program provides an opportunity to undergraduate and M.Sc first year students of IITK, Non-IITK and also to the students of SAARC countries, with an objective of giving in-hand experience of technical learning in their field of research.

This year SURGE-2022 program was conducted in online mode from second week of May to July 2022. A total of 232 students (167 IITK, 64 Non-IITK and 01 student under SAARC category) successfully completed the internship. SURGE-2022 program also provides a stipend to the participants selected under the Institute Funded category and Project Funded category. This program has also a provision of awarding the participants who produce exceptional quality research work. They are given a cash award under different award categories along with a commendation certificate. However, all the successful participants of this program are given a participation certificate.



SURGE - 2022 AWARDS

To encourage and appreciate the efforts and hard work of the participants, SURGE program provides the following awards to its participants;

- (i) **Dr. Elizabeth and Dr. Verkey Cherian Award:**
 - a) For producing exceptional quality research for overall Best Project, which carries a cash award of Rs. 5,000/- plus a commendation certificate.
 - b) For producing exceptionally Outstanding Poster, which carries a cash award of Rs. 5,000/- plus a commendation certificate.
- (ii) **Best Project Award for Engineering** (*started from this year*):
For producing exceptional quality research in Engineering, which carries a cash award of Rs. 10,000/- plus a commendation certificate.
- (iii) **Best Project Award for Sciences** (*started from this year*):
For producing exceptional quality research in sciences, which carries a cash award of Rs. 10,000/- plus a commendation certificate.

The awardees are selected, based on their overall performance, by a team of evaluators comprising eminent faculties from the various departments of our institute.

This year following participants were awarded the aforesaid awards under various categories;

S.No.	Name of Award	Department of the participants	Project Title
1.	Dr. Elizabeth and Dr. Verkey Cherian Award		
	(i) Ms. Shradha Singh (IIT (ISM) DHANBAD)	Applied Geology	Damage Quantification at impact craters using microfractures and X – ray diffraction (XRD).
	(ii) Mr. Yash Gupta (IIT Kanpur)	Computer Science & Engineering	Benchmarking spatial and single cell transcriptomics integration methods for cell type deconvolution.

2.	Best Project Award for Engineering:		
	(i) Mr. Somya Kumar Singh (IIT Kanpur)	Chemical Engineering	Mathematical modeling of carbon dioxide capture and mineralisation using coal ash.
	(ii) Mr. Armeet Singh Luthra (IIT Kanpur)	Chemical Engineering	Discrete element method simulation of solid granular particles using C++.
	(iii) Mr. Akshaj Singhal (IIT Kanpur)	Material Science & Engineering	Effect of Pure Bending on a Flexible Lithium Ion Battery using Finite Element Analysis.
	(iv) Ms. Anjali Singh (NIT Raipur)	Metallurgical & Materials Engineering	Synthesis and Characterization of high performance p-type Delafossite High Entropy Oxides for Thermoelectric Applications.
3.	Best Project Award for Sciences:		
	(i) Mr. Suraj S (IIT Kanpur)	Chemistry	Wavelet Representation of Free Energy Surfaces (FESs).
	(ii) Mr. Vinit Sinha (IIT Kanpur)	Mathematics & Statistics	On some Infinite Strings for String Algebras.
	(iii) Mr. Gaurang Dangayach (IIT Kanpur)	Mathematics & Scientific Computing	Statistical Forecasting of future COVID-19 wave in India.
	(iv) Mr. Anubhab Halder (IIT Kanpur)	Chemistry	Exploring the Förster Resonance Energy Transfer (FRET) Possibilities in the Perovskite-Dye Pair.



SURGE FUNDING

Institute Funded Category (Support from DORA):

Under this category, a maximum of 60 SURGE participants (IITK and Non-IITK) and a maximum of 04 participants of SAARC countries are financially supported by DORA, IIT Kanpur through donations received from Alumni.

This year 51 SURGE participants including 01 participant of SAARC country (*Nepal*) received a stipend for Rs. 12,500/- and their administrative charges were also reimbursed. The details of these participants are mentioned below;

S.No	Name	Mentor	Department	Category
1	Mr. Tanush Kumar	Dr. Hamim Zafar	CSE	IITK
2	Mr. Husain Tamim Bamboowala	Dr. Ashoke De	AE	Non-IITK
3	Ms. Sonal Agrawal	Dr. Gururaj Mirle Vishwanath	EE	IITK
4	Mr. Aryan Vora	Dr. Priyanka Bagade	CSE	IITK
5	Mr. Anubhab Halder	Dr. Vishal Govind Rao	CHM	IITK
6	Mr. Suman Saha	Dr. Nisanth N Nair	CHM	IITK
7	Ms. Aritri Halder	Dr. Umesh Madanan	ME	Non-IITK
8	Ms. Jhilik Paul	Dr. RN Sengupta	IME	Non-IITK
9	Mr. Dishay Uday Mehta	Dr. Ashutosh Modi	CSE	IITK
10	Ms. Priyasha Das	Dr. Chunendra K Sahu	CE	Non-IITK
11	Mr. Armeet Singh Luthra	Dr. Anurag Tripathi	CHE	IITK
12	Ms. Manisa Maity	Dr. Arijit Ganguly	MTH	Non-IITK
13	Ms. Anisha Choudhury	Dr. Tanmoy Maiti	MSE	Non-IITK
14	Ms. Arsha Choudhary	Dr. Thiruvancheril G Gopakumar	CHM	IITK
15	Mr. Vinit Sinha	Dr. Amit Kuber	MTH	IITK
16	Mr. Varun Pant	Dr. Sanjay Mittal	AE	IITK
17	Ms. Pallavi Singh	Dr. Yatindra Nath Singh	EE	Non-IITK

18	Mr. Rajat Sharma	Dr. Priyanka Ghose	CE	Non-IITK
19	Mr. Gaurang Dangayach	Dr. Shalabh, Dr. Subhra Sankar Dhar	MTH	IITK
20	Ms. Diya Dany	Dr. Malay K Das	ME	Non-IITK
21	Mr. Ishaan Maheshwari	Dr. Soumya Ranjan Sahoo	EE	IITK
22	Ms. Tamanna	Dr. Chandraprakash C	ME	Non-IITK
23	Ms. Yashika Malhotra	Dr. Alakesh Ch Mandal	AE	IITK
24	Mr. Nithish M	Dr. Balaji Devaraju	CE	Non-IITK
25	Mr. Khyati Jain	Dr. Apparao Draksharapu	CHM	IITK
26	Mr. Aaryan Srivastava	Dr. Joydeep Chakraborty	PHY	IITK
27	Ms. V Shilpi	Dr. Aditya Medury	CE	Non-IITK
28	Mr. Anabil Maity	Dr. Tanmoy Mukhopadhyay	AE	Non-IITK
29	Mr. Rashi Kumar	Dr. Pragathi P Balasubramani	CGS	Non-IITK
30	Mr. Shubhadip Paul	Dr. Krishanu Biswas	MSE	Non-IITK
31	Mr. Piyush Beegala	Dr. Debapriya Basu Roy	CSE	IITK
32	Mr. Prithu Jayaswal	Dr. Kallol Mondal	MSE	Non-IITK
33	Mr. Kushal Gehlot	Dr. Amitangshu Pal	CSE	IITK
34	Mr. Sushmayan Trivedi	Dr. Manjesh Singh	ME	Non-IITK
35	Mr. Utkarsh Aditya	Dr. Bishakh Bhattacharya	ME	IITK
36	Mr. Syed Qayem Mehdi	Dr. Rahul Mangal	CHE	IITK
37	Mr. Shreyansh Sinha	Dr. Urbi Chatterjee	CSE	IITK
38	Mr. Adit Thampi	Dr. Sarang Ingole	MSE	IITK
39	Mr. Manan Kalavadia	Dr. Rajesh M Hegde	EE	IITK
40	Ms. Vaishali Rawat	Dr. Animangsu Ghatak	CHE	IITK
41	Ms. Shradha Singh	Dr. Amar Agarwal	ES	Non-IITK
42	Mr. Teki Sai Veera Bhadra Nikhil	Dr. Dharendra S Katti	BSBE	IITK
43	Mr. A Sanjay Kumar	Dr. Saravanan Matheshwaran	BSBE	Non-IITK

44	Mr. Ujwal Kumar	Dr. Salil Goel	CE	IITK
45	Ms. Sonali Das	Dr. Rabiul Haque Biswas	ES	Non-IITK
46	Ms. Suhani	Dr. Abhishek K Gupta	EE	IITK
47	Ms. Neha Sengar	Dr. Ritika Gautam	CHM	Non-IITK
48	Ms. Juhee Chandrachud	Dr. Sameer Khandekar	ME	IITK
49	Ms. Agrata Singh	Dr. J Ramkumar	ME	Non-IITK
50	Ms. Sakshi Dhiman	Dr. Vivek Verma	MSE	Non-IITK
51	Mr. Aadarsh Ojha	Dr. Adhip Agarwala	PHY	SAARC

Project Funded Category (Support from Mentors):

Under this category the participants get financial support from their mentors, based on their overall performance. This year 24 participants received stipend from their respective mentors. The details of these participants are mentioned below;

S.No	Name	Mentor	Department	Category
1	Mr. Muhammad Isa Mazhari	Dr. R Vijaya	PHY	IITK
2	Ms. Swati Kumari	Dr. Chunendru K Sahu	CE	IITK
3	Mr. Darshan Kumar Biswas	Dr. Chunendru K Sahu	CE	Non-IITK
4	Mr. Somya Kumar Singh	Dr. Raghavendra Ragipani	CHE	IITK
5	Mr. Prabhat Kr Meena	Dr. Tushar Apurv	CE	IITK
6	Mr. Suraj S	Dr. Nishanth N Nair	CHM	IITK
7	Mr. Mudit Chand Narayan	Dr. Balaji Devaraju	CE	IITK
8	Mr. Sharan Balasubramanian	Dr. Balaji Devaraju	CE	Non-IITK
9	Mr. Chinmay Joshi	Dr. Aditya Medury	CE	IITK
10	Mr. Shadil B	Dr. Nitin Mohan	BSBE	Non-IITK
11	Mr. Ojsi Goel	Dr. NP Gurao	MSE	IITK
12	Mr. M Arunbalaji	Dr. Anoop Singh	IME	Non-IITK

13	Ms. Gauri Menon	Dr. Adithya Anil	BSBE	IITK
14	Mr. Anmol Gupta	Dr. Priyanshu	BSBE	IITK
15	Ms. Sanika Gumaste	Dr. Harsh Arora	BSBE	IITK
16	Mr. Hardik Srivastava	Dr. Nisheeth Srivastava	CSE	Non-IITK
17	Ms. Aishashwini	Dr. Dipak K Giri	AE	IITK
18	Mr. Ankit M Patel	Dr. Dipak K Giri	AE	IITK
19	Ms. Shambhavi Sabarwal	Dr. Dipak K Giri	AE	IITK
20	Mr. Shubham Kumar	Dr. Dipak K Giri	AE	IITK
21	Ms. Ishita Sharma	Dr. YN Singh	EE	Non-IITK
22	Mr. Saransh Shivhare	Dr. Vipul Arora	EE	IITK
23	Ms. Swati Tiwari	Dr. Onkar Dixit	CE	Non-IITK
24	Ms. Sreejita Das	Dr. Supratik Banerjee	PHY	Non-IITK

After the successful completion of SURGE-2022 internship, a felicitation ceremony was organized by CCE, which was held on 09.11.2022 at Lecture Hall Complex 17, wherein the names of awardees were announced and certificates were distributed to the awardees and eligible participants, followed by a small tea party. The felicitation ceremony was chaired by Prof. Kantesh Balani, Dean, Resources and Alumni along with Prof. BV Rathish Kumar, Head, CCE.

Mentors under whom the participants successfully completed their internship were also invited. Members of SURGE Evaluation Committee who helped us in finalizing the awardees of SURGE-2022 program were also invited to attend the felicitation ceremony.



SURGE-2022 IITK PARTICIPANTS

S.No.	Student Name	Mentor Name	Project Title
1	Mr. Aaryan Srivastava	Dr. Joydeep Chakraborty	Group Theory and its Applications in Physics
2	Ms. Aayushi Mishra	Dr. Sachin Y Shinde	Effect of Interfoil Distance on Wake Interaction of Airfoils Arranged in Different Orientations
3	Mr. Abhay Sisodia	Dr. Raj Ganesh S Pala	Electrochemical Taste Sensor
4	Mr. Ablokit Joshi	Dr. Shikhar Misra	To study and examine data plots using Machine Learning and Computer Vision and generate a Comma-Separated Values (CSV) file
5	Mr. Adarsh Kumar	Dr. KS Venkatesh	Machine learning approach to identify occupied and empty chairs from a live scene or pre taken image
6	Mr. Adit Jain	Dr. Twinkle Tripathy	Patterns in a Unicycle Model
7	Mr. Adit Thampi	Dr. Sarang Ingole	Microfabrication of Silicon Nanowires through Metal-Assisted Chemical Etching (MACE) on Silicon Substrate
8	Mr. Aditya Anand	Dr. RRK Sharma	Solving Multi Item Capacitated Lot Sizing Problem: A New Lagrangian Relaxation Procedure
9	Mr. Aditya Singh Kaurav	Dr. Ishan Sharma	Pulsatile Flow
10	Ms. Aishashwini	Dr. Dipak K Giri	Asteroid Exploration using a small space robot subject to Hybrid Actuators
11	Ms. Aishwarya Srivastava	Dr. KS Venkatesh	Deep 3D Face Reconstruction using weakly supervised learning
12	Mr. Ajit Kumar Sa	Dr. Ashish Garg	Modeling of Solid-Electrolyte Interphase Induced Degradation in Lithium-Ion Batteries
13	Mr. Akshaj Singhal	Dr. Monica Katiyar	Effect of Pure Bending on a Flexible Lithium Ion Battery using Finite Element Analysis
14	Mr. Akshat Mishra	Dr. Vishal Agarwal	Modelling Pyrolysis of Methane in Gas-phase MnCl ₂ and molten MnCl ₂ /KCl
15	Mr. Akshit Singh Chauhan	Dr. Salil Goel	Generation of Labeled Point Cloud Data of any Virtual World
16	Mr. Alok Kumar Mishra	Dr. Anubha Goel	Assessment of Natural and anthropogenic factors affecting Air Quality in North Indian cities

17	Mr. Aman Kumar Singh	Dr. Salil Goel	Adding Color Information to LiDAR using Camera Calibration
18	Mr. Amit Kumar	Dr. Raj Ganesh S Pala	Electrochemical Taste Sensor
19	Mr. Anaavi Alok	Dr. RN Sengupta	Introduction to various Techniques of Multi-Criteria Decision Making
20	Ms. Ananya Mehrotra	Dr. Rajesh M Hegde	Data Heterogeneity-based Model Aggregation in Federated Learning
21	Ms. Ananya Priyadarshi	Dr. Sachin Y Shinde	Visualisation of flow past various bluff bodies/filament configuration in a flowing soap film
22	Mr. Ankit M Patel	Dr. Dipak K Giri	Rendezvous and Docking of a Chaser Spacecraft with a Dual-Axis Gimbaled Electric Thruster
23	Mr. Anmol Gupta	Dr. Arjun Ramakrishnan	Designing Virtual reality- based experiments to understand human behaviour on decision paradigms
24	Mr. Anshul Mehta	Dr. Dipin S Pillai	COMSOL simulation of electrowetting on non-patterned dielectric substrates
25	Ms. Anu	Dr. Gururaj Mirle Vishwanath	Simulink model for biomass and solar PV panel
26	Mr. Anubhab Halder	Dr. Vishal Govind Rao	Exploring the Förster Resonance Energy Transfer (FRET) Possibilities in the Perovskite-Dye Pair
27	Ms. Anushka Pal	Dr. Suparno Mukhopadhyay	Structural optimization of truss bridges to minimize structural damage and to prevent its failure based on finite element analysis
28	Ms. Apeksha Agrawal	Dr. RN Sengupta	Study of MCDM Methods: ANP, AHP and MACBETH
29	Mr. Arka Roy	Dr. Anurag Tripathi	Modelling of Fluid-Solid multi-phase flow using CFD-DEM simulation
30	Mr. Armeet Singh Luthra	Dr. Anurag Tripathi	Discrete element method simulation of solid granular particles using C++
31	Mr. Arnav Pandey	Dr. C Chandraprakash	Bio-inspired soft robot equipped with pneumatic-controlled actuation
32	Ms. Arsha Choudhary	Dr. Thiruvancheril G Gopakumar	Molecular functional materials
33	Mr. Aryaman Badkul	Dr. Sanjay Mittal	Aerodynamics of a Badminton Shuttlecock
34	Mr. Aryan Garg	Dr. Vaibhav Arghode	Modelling of a Non-Premixed Flat Flame Burner
35	Mr. Aryan Vora	Dr. Priyanka Vijay Bagade	Microbial Colony Identification using Deep Learning Methods

36	Mr. Ashish Gautam	Dr. RRK Sharma	Formulation of SSPWLP (Single Stage Plant-Warehouse Location Problem): For Service Level Performance
37	Mr. Ashish Kumar	Dr. Alakesh Ch Mandal	Visualization of Grid Turbulence in soap film tunnel
38	Mr. Ashutosh Muduly	Dr. Pranav Joshi	Fabricating a sensor (hot wire sensor with the hot wire mounted close to the wall) to measure wall shear stress
39	Mr. Atharva Dehadraya	Dr. Ishan Sharma	Experimental Modelling of Air-to-Air Refueling
40	Mr. Ayush Agrawal	Dr. Suvendu Samanta	Investment management using python
41	Mr. Ayush Raj	Dr. Rahul Mangal	Behaviour of Active Droplets in Complex Media
42	Ms. Ayushi Agrawal	Dr. Anubha Goel	Evaluation of change in fuel consumption by minimization of traffic flow obstructions on highways.
43	Ms. Bipasha Jadhav	Dr. Animesh Mandal	Denoising of Very low-frequency data using Empirical mode decomposition method
44	Ms. Chhavi Agrawal	Dr. Salil Goel	Pedestrian Positioning using Foot Mounted Inertial Sensors.
45	Mr. Chinmay Joshi	Dr. Aditya Medury	Exploratory Analysis of Travel Times in Delhi using UBER Movement data
46	Mr. Devansh Goyal	Dr. Urbi Chatterjee	Implemented Linear block code and BCH code
47	Ms. Devika Sahu	Dr. Anubha Goel	How to make the indoor environment thermally comfortable by reducing the wastage of energy at the same time.
48	Mr. Dheeraj Bana	Dr. Suparno Mukhopadhyay	Calibration of stiffness of members of truss-type structure using Finite Element and Artificial Neural Network Model
49	Ms. Diksha	Dr. Rik Dey	Drift diffusion equation using theory of random walk
50	Mr. Dishay Uday Mehta	Dr. Ashutosh Modi	Affective computing on Indian Demographics
51	Ms. Divya M	Dr. Lalit Saraswat	Philosophical explication on Life and Fermi's Paradox in the Light of Astrobiology and Intelligence
52	Ms. Divyani Gaur	Dr. Pranav Joshi	Calculation of Pressure From Velocity Data Using Numerical Solution to The Poisson Equation
53	Mr. Dwij Raj Hari	Dr. Shikhar K Jha	Interactive visualization software for crystallography
54	Mr. Faheem Nizar	Dr. Abhishek K Gupta	Antenna Tracker Project

55	Mr. Gaurang Dangayach	Dr. Shalabh & Subhra Sankar Dhar	Statistical Forecasting of future COVID-19 wave in India"
56	Mr. Gaurav Kumar	Dr. Chinmoy Kolay	Study of mechanical properties of elastomeric dampers based on Indian natural rubber for controlling dynamic response of structures
57	Ms. Gauri G Menon	Dr. Arjun Ramakrishnan	Effects of auditory stimuli on human decision-making in the context of a foraging task.
58	Mr. Gautam Bansal	Dr. Amitangshu Pal	Investigation of Variation in Received Signal Strength with different meteorological parameters using different IoT devices and networks
59	Mr. Harsh Garg	Dr. Shakti S Gupta	Operational space control for 3R planar manipulator
60	Mr. Harshit Kumar	Dr. Suwendu Samanta	Various Compensation Circuit Topologies For Wireless Power Transfer (WPT)
61	Mr. Harshul Midha	Dr. Twinkle Tripathy	Developing a hardware testbed for visual feedback in an array of cameras.
62	Mr. Harsit Sinha	Dr. Amitangshu Pal	Detection of 3D Object in Adverse weather Condition using LIDAR Dataset
63	Mr. Himanshu Jindal	Dr. Vipul Arora	Real-Time Audio Analyzer
64	Mr. Himanshu Kumar	Dr. Deepak Dhingra	Evaluation of Data Classification Methods for Mineralogy Applications
65	Mr. Hitesh Arunagiri	Dr. Deepak Dhingra	Morphometric Survey of Ejecta Patterns of Impact Craters on the Moon
66	Mr. Ishaan Maheshwari	Dr. Soumya Ranjan Sahoo	Browser-based Ground Control Station for Aerial/ Ground/ Underwater Autonomous vehicle with Multi-Agent System Support
67	Mr. Jatin Chauhan	Dr. Abhishek K Gupta	Blockage prediction using machine learning
68	Ms. Juee Chandrachud	Dr. Sameer Khandekar	Design and Development of Artificial Snow Making Machine for studying Avalanches under Laboratory Conditions
69	Mr. Kaushik Raj V Nadar	Dr. Nitin Gupta	An Automated Intervention for helping Depressed Patients
70	Mr. Khyati Jain	Dr. Apparao Draksharapu	Development of structural and functional models for Class Ic ribonucleotide reductase
71	Ms. Kirti Gupta	Dr. Prakash Chandra Mondal	Design, synthesis, characterization and solid-state conductivity of viologen compounds
72	Mr. Kumar Abhishek	Dr. Bharat Lohani	Developing system for labelling point cloud data for deep learning purpose
73	Mr. Kushal Gehlot	Dr. Amitangshu Pal	Analysis of EEG Dataset for understanding the working of human brain
74	Mr. L Gokulnath	Dr. Ashutosh Modi	Affective computing on Indian Demographics.

75	Mr. Manan Kalavadia	Dr. Rajesh M Hegde	Device Selection in Blockchain-enabled Federated Learning Framework
76	Mr. Mayank Chaurasiya	Dr. Gururaj Mirle Vishwanath	AI Chatbot with NLP in Python
77	Mr. Md SAIF	Dr. Rahul Mangal	Pairwise interaction in Active Swimmer
78	Mr. Milan Anand Raj	Dr. Hamim Zafar	Evaluation of the accuracy of DestVI, CARD and AutoGeneS on cell-type Deconvolution
79	Mr. Mudit Chand Narayan	Dr. Balaji Devaraju	Determining gravity anomalies and how earth's water bodies affect them using GRACE and GRACE-FO data
80	Mr. Muhammad Isa Mazhari	Dr. R Vijaya	Design, simulation and analysis of metasurface
81	Mr. Naman Jain	Dr. Niraj Mohan Chawake	Estimating Creep Curves of High-Temperature Alloys Using Machine Learning and Computational Techniques
82	Mr. Naman Singla	Dr. Debapriya Basu Roy	Side Channel Attacks on Blockchain Network
83	Ms. Nandini Goel	Dr. Hamim Zafar	Benchmarking machine learning models for cell type deconvolution of spatial transcriptomics data.
84	Mr. Navneet Singh	Dr. Bharat Lohani	Testing deep learning model for LiDAR data segmentation
85	Ms. Nidhi	Dr. Suparno Mukhopadhyay	Computation of Stress Concentration Factors in Plates with Square and Circular Holes using Finite Element Analysis
86	Ms. Nikita Singh	Dr. KS Venkatesh	Blind Machine Operations
87	Mr. Nishant Roshan	Dr. Debapriya Basu Roy	Homomorphic Encryption
88	Ms. Nitya Aggarwal	Dr. Abhishek K Gupta	Optimal Deployment of UAVs for Dynamic Users
89	Ms. Ojsi Goel	Dr. Nilesh Prakash Gurao	Prediction of Stacking Fault Energy using Machine Learning
90	Mr. Parteek	Dr. Amitangshu Pal	Building an Adulteration Check System
91	Mr. Parth Sharma	Dr. Tanmoy Mukhopadhyay	Electromagnetic Wave Propagation Through Composites
92	Ms. Parul Singh	Dr. Sachin Y Shinde	Effect of change in chordwise length of a flexible flapping foil on flow generation in a quiescent fluid
93	Mr. Piyush Beegala	Dr. Devpriya Basu Roy	Fault Attack on Post Quantum Cryptographic Algorithm S.I.K.E.
94	Mr. Prabhat Kumar Meena	Dr. Tushar Apurv	Understanding Spatial and Temporal patterns of Droughts and Heatwaves in India
95	Mr. Prabhu Dayal Yadav	Dr. Suparno Mukhopadhyay	Progressive collapse analysis of truss, frames and bridges using finite element Modelling

96	Mr. Prarabdh Dar	Dr. Thirumulanathan D	Optimal Power Allocation in Rate-Splitting based Systems using Deep Reinforcement Learning
97	Mr. Prateek Kumar Pandey	Dr. Amitangshu Pal	Smart Camera Solutions for Activity Detection
98	Mr. Pratyush Dayal	Dr. Mohit Law	Learning machining stability using Machine Learning technique
99	Ms. Priya Balkrushna Gole	Dr. Ashutosh Modi	Towards Indian sign language processing
100	Mr. Pulkrit Dhamija	Dr. Urbi Chatterjee	Implementation of Cryptographical Group Authentication Protocol for Secure Communication in UAV networks
101	Mr. Raj Verma	Dr. Ishan Sharma	Design and Manufacturing of a dual Lathe Machine
102	Mr. Rajarshi Dutta	Dr. Shikhar Misra	Analysis of Transmission Electron Microscopy Images using Machine learning/Deep learning methods
103	Ms. Rashmi Sharma	Dr. Mahendra K Verma	Testing Butterfly Effect in Thermal Convection
104	Mr. Ravi Kumar	Dr. Chinmoy Kolay	Diagrid System
105	Ms. Riddhima Chaudhary	Dr. Ashwani Kumar Thakur	Supramolecular oxalate assemblies implicated in Type 2 Hyperoxaluria: formation and its characterization
106	Mr. Rishi Kachhwaha	Dr. Sarang Ingole	TiO ₂ Thin Film and its Characteristics
107	Mr. Rishi Malhotra	Dr. Mohit Law	Learning machining stability using Machine Learning algorithms
108	Mr. Ritick Gupta	Dr. Abhishek K Gupta	Optimal User Scheduling, Pairing and Access Point Selection Via Machine Learning
109	Mr. Ritik Raj	Dr. Sachin Y Shinde	Computational Analysis of NACA Airfoils
110	Mr. Rohit Choudhary	Dr. RRK Sharma	Formulation of SPLP (Simple Plant Location Problem): For Service Level Performance
111	Ms. Rose Agarwal	Dr. RN Sengupta	Multi-Criteria Decision Making Methods- ELECTRE, VIKOR, TOPSIS-an extensive research
112	Mr. S Pradeep	Dr. Ashutosh Modi	Towards Indian sign language processing
113	Mr. Sagar Arora	Dr. Arnab Hazra	Bayesian Spatial Quantile Regression for Areal Data
114	Mr. Saksham Arora	Dr. Urbi Chatterjee	DOS Attack and False Data Injection on a COTS Drone
115	Ms. Saloni Das	Dr. Saravanan Matheshwaran	Genome-wide identification of histone-modifying genes in Cicer arietinum L (Chickpea)

116	Ms. Sanika Gumaste	Dr. Arjun Ramakrishnan	Using a restless bandit game to investigate whether there is a link between schizotypy and decision-making in dynamically changing environments
117	Mr. Sanmati Dhananjay Pande	Dr. Abhishek K Gupta	Optimal Deployment of UAV for Tracking Users
118	Mr. Sanyam Singla	Dr. Ishan Sharma	Experiments on impacted granular chains
119	Mr. Saransh Shivhare	Dr. Vipul Arora	Android audio processing
120	Mr. Satvik Chandra Shukla	Dr. RRK Sharma	Formulation of SPLP (Simple Plant Location Problem): For Service Level Performance
121	Mr. Satyansha Dev	Dr. Gururaj Mirle Vishwanath	Wind Power Forecasting Using Machine Learning Algorithms
122	Ms. Shambhavi Sabharwal	Dr. Dipak K Giri	Design and Development of 3 Degrees of Freedom Robotic System for Autonomous Capturing and Docking of Space Objects Testbed
123	Mr. Sharmin Ansar	Dr. Ashwani Kumar Thakur	Designing a solar lyophilizer
124	Mr. Shashwat Gupta	Dr. Ashutosh Modi	Towards Indian sign language processing
125	Mr. Sheshank	Dr. Gaurav Tiwari	Probabilistic Determination of Stability of Rock Slope
126	Ms. Shikha Sharma	Dr. Alakesh Ch Mandal	Spatio-temporal stability analysis of separated flows
127	Mr. Shivam Pandey	Dr. Sachin Y Shinde	Extraction of Deformation Profiles of flexible surfaces from raw images
128	Mr. Shivang Pandey	Dr. Mahendra K. Verma	Calculating Taylor microscale in the Earth's magnetosheath
129	Mr. Shivam Singhal	Dr. KS Venkatesh	Night-Time Image Enhancement
130	Ms. Shreshtha Agarwal	Dr. Soumya Ranjan Sahoo	Docking of Multiple Vehicles in Space
131	Mr. Shreyansh Agarwal	Dr. Ashutosh Modi	Towards Indian sign language processing
132	Mr. Shreyansh Sinha	Dr. Urbi Chatterjee	Cryptanalysis of RSA
133	Ms. Shruti Gupta	Dr. Rahul Mangal	Active swimmers in dilute polymer solutions

134	Mr. Shubham Kumar	Dr. Dipak K Giri	Design and Development of 3 DOF Spacecraft Testbed and Testing of Deep Reinforcement Learning based Control for Autonomous Capturing and Docking of a Spacecraft
135	Mr. Shubham Shiv Joshi	Dr. Shikhar Misra	Analysing properties and applications of self-assembled Vertically Aligned Nanocomposite thin films using Machine learning
136	Mr. Somansh Prakash Dubey	Dr. Bishakh Bhattacharya	Study of static and dynamic safety of autonomous power substation inspection robot
137	Mr. Somya Kumar Singh	Dr. Raghavendra Ragipani	Mathematical modeling of carbon dioxide capture and mineralisation using coal ash
138	Ms. Sonal Agrawal	Dr. Gururaj Mirle Vishwanath	Wind Speed Forecasting Using LSTM model
139	Mr. Sparsh Prasad	Dr. Suvendu Samanta	On Investment Management using machine learning and Python
140	Mr. Stephen Justinraj D	Dr. Rakesh Kumar	Study of fluid flows through microchannels, for electronics cooling applications
141	Mr. Sudhanshu Kumar	Dr. RRK Sharma	Multi-Period, Single Commodity, and Single Stage Warehouse Location Problem with Location, Distribution Inventory, and Shortage Costs
142	Ms. Suhani	Dr. Abhishek K Gupta	Optimal UAV Deployment for Dynamic Traffic
143	Ms. Suman Saha	Dr. Nisanth N Nair	Development of a New Approach for Free Energy Calculations
144	Ms. Sumedha Shekhar	Dr. Kanwar Singh Nalwa	Optimization of cooling solution for Hybrid Photovoltaic system
145	Mr. Suraj Sudhakar	Dr. Nisanth N Nair	Wavelet Representation of Free Energy Surfaces
146	Mr. Suyash Kumar Pathak	Dr. Amit Kuber	On efficient bounds on the length of prime bands in non-domestic string algebras
147	Ms. Swati Kumari	Dr. Chunendra K Sahu	Filling Box Model In Porous Media Of Gravity Flow
148	Mr. Syed Qayem Mehdi	Dr. Rahul Mangal	Pair Interactions of Active Swimmers
149	Ms. Taniya Shaji	Dr. Niraj Sinha	Temporomandibular Joint Total Replacement Prosthesis
150	Mr. Tanush Kumar	Dr. Hamim Zafar	Benchmarking the performance of deconvolution models like Stereoscope, SpatialDWLS and Seurat in spatially mapping cell type proportions by integrating single cell sequencing data and spatial transcriptomics data

151	Mr. Tejas Ramakrishnan	Dr. Ashutosh Modi	Affective Computing in Indian Cultural Setting
152	Mr. Teki Sai VeeraBhadra Nikhil	Dr. DS Katti	Regulating the drug release kinetics of Mesoporous Silica Nanoparticles
153	Mr. Tushar Kumar	Dr. Ashish Dutta	Kinematic Analysis and Balancing of 12 degree of freedom biped robot
154	Mr. Tushar Sachan	Dr. Kanwar Singh Nalwa	Data Driven prediction of cycle life of battery
155	Mr. Ujwal Kumar	Dr. Salil Goel	Object Detection on LiDAR Images
156	Mr. Utkarsh Aditya	Dr. Bishakh Bhattacharya	Study of autonomous power substation inspection robot
157	Mr. Vaibhav Goyal	Dr. Debapriya Basu Roy	Adversarial learning based countermeasure to prevent machine learning assisted side channel attacks
158	Ms. Vaishali Rawat	Dr. Animangsu Ghatak	Water Imbibition through capillary action on confinement within wettable/ non-wettable surfaces
159	Ms. Vaishnavi	Dr. RRK Sharma	Formulation of SSPWLP (Single Stage Plant-Warehouse Location Problem): For Service Level Performance
160	Ms. Vandana Basrani	Dr. Ketan Rajawat	UAV Tracking using Steerable Antennas
161	Mr. Vasu Paliwal	Dr. Ishan Sharma	Solving some complex dynamic problems using the tools developed in the ESO209 course
162	Ms. Vidhi Jain	Dr. Raju Kumar Gupta	Recycling of Spent Lithium-ion Batteries for sustainable environment
163	Mr. Vikas Varshney	Dr. Sachin Y Shinde	Visualisation of flow past various bluff bodies/filament configuration in a flowing soap film
164	Mr. Vinit Sinha	Dr. Amit Kuber	On some infinite strings for string algebras
165	Mr. Yash Girish Jahagirdar	Dr. Santosh Kumar Misra	Surface Optimisation of Biosensor for Improving its Detection Sensitivity
166	Mr. Yash Gupta	Dr. Hamim Zafar	Benchmarking spatial and single cell transcriptomics integration methods for cell type deconvolution
167	Ms. Yashika Malhotra	Dr. Alakesh Ch Mandal	Stability analysis of a computed base flow

SURGE-2022 NON-IITK PARTICIPANTS

S.No.	Student Name	Institute Name	Mentor Name	Project Title
1	Ms. Aadya Menon	Cochin University of Science and Technology	Dr. Venkata Jayasurya Y	FDTD simulation to study the scattering by subwavelength spherical and ellipsoidal particles
2	Ms. Aditi Kharat	NIT, Calicut	Dr. Dipak K Giri	Spacecraft Navigation using Pulsars
3	Ms. Agrata Singh	MNNIT, Allahabad	Dr. J Ramkumar	Design and Development of MDF Based Hand Brace
4	Mr. Anabil Maity	IEST, Shibpur	Dr. Tanmoy Mukhopadhyay	Energy-based critical insights for modulating sequential mode-dependent bi-stability in spatially graded metamaterials (negative stiffness beam)
5	Ms. Anamitra Ghosh	Jadavpur University	Dr. Malay K Das	Unsteady Targeted Drug Particle Delivery from different cross sections of a tortuous cerebral artery and selection of the most suitable section for catheter placement and injection of drug particles towards the aneurysm sac
6	Mr. Anirudh Balaji NS	SASTRA University	Dr. Ashoke De	Suppression of Vortex Shedding using a Slit in Airfoil
7	Ms. Anisha Choudhury	NIT, Rourkela	Dr. Tanmoy Maiti	P-type bulk oxide material for thermoelectric power generation
8	Ms. Anjali Singh	NIT, Raipur	Dr. Tanmoy Maiti	Synthesis and Characterization of high-performance p-type Delafossite High Entropy Oxides for Thermoelectric Applications
9	Ms. Anushka Jantwal	Delhi Technological University	Dr. Tarun Gautam	An investigation on – Role of transition metals with water soluble organic carbon in the formation of secondary organic aerosol and metallo-organics in PM ₁ sampled during post monsoon and pre-winter time
10	Ms. Anwesha Mandal	IIT, Delhi	Dr. Devpriya Kumar	Effect of Implicit control on self reference effect: Investigation using temporal order judgment task
11	Ms. Aritri Halder	Jadavpur University	Dr. Umesh Madanan	Numerical Investigation into Heat Transfer Augmentation in a Square Minichannel Heat Sink using Modified Butterfly Inserts

12	Mr. Aryan Singh	HBTU, Kanpur	Dr. Purna Gautam	Solution for the Leachate Treatment and Eradication of the Problem faced during the Process for this Treatment
13	Mr. B Gokulpriyan	IIIT-DM, Kancheepuram	Dr. Vipul Arora	Audio Search using Natural language text queries
14	Mr. Chandan Gupta	NIT, Rourkela	Dr. Abhishek Sarkar	Modelling inkjet printing for energy storage devices
15	Mr. Darshan Kumar Biswas	IEST, Shibpur	Dr. Chunendra K Sahu	Interface Detection of Gravity Current Propagating Through Porous Media Using MATLAB
16	Mr. Debsundar Dey	IEST, Shibpur	Dr. Ushasi Roy	A computational study on the impact response of a micro-particle on an infinite substrate as a function of the materials constitutive behavior.
17	Ms. Diya Dany	VIT, Chennai	Dr. Malay K Das	Unsteady Targeted Drug Delivery from the walls of a cerebral artery.
18	Ms. Haeshini	NIT, Tiruchirappalli	Dr. Anshu Gaur	Adsorption of pyridine on graphene using DFT
19	Mr. Hardik Srivastava	Manipal University Jaipur	Dr. Nisheet Srivastava	Freeing the sharing economy from commission-based rent extraction
20	Mr. Husain Tamim Bamboowala	Jadavpur University	Dr. Ashoke De	Numerical Investigation of JellyFish Locomotion with Immersed Boundary Method.
21	Ms. Ishita Sharma	NIT, Hamirpur	Dr. Yatindra Nath Singh	Peer to Peer Brihaspati 4 application
22	Ms. Jhilik Paul	Jadavpur University	Dr. RN Sengupta	Capacity Planning for 'Service To Deliver' Models with Service Level Agreements
23	Mr. Kailashnath Bharathan	SASTRA University	Dr. Ashoke De	Suppression of Vortex Shedding using a Slit in Airfoil.
24	Mr. Karthik Narayanan	CSIR-CECRI	Dr. Raju Kumar Gupta	A Review on type of Batteries and potential future technologies
25	Mr. Kartikey Pandey	IIT BHU, Varanasi	Dr. Kantesh Balani	Adhesin Protein Interaction of S. Aureus and E. Coli Bacteria with Various Biomaterial Surfaces
26	Ms. Komal Kamble	NIT, Trichy	Dr. Dipak K Giri	Coupled Attitude-Orbit Dynamics and Control for an Electric Sail in a Heliocentric Transfer Mission

27	Mr. Kuldeep Mishra	Bundelkhand University, Jhansi	Dr. Mainak Das	Production of mushroom spawn (seed) using mycelia & pathos plant propagation using plant tissue culture technique
28	Mr. M Arun Balaji	NIT, Trichy	Dr. Anoop Singh	Creating a Dashboard to automatically check for new ERC Documents updated on the ERC Websites and download them.
29	Ms. Manisa Maity	IIT, Tirupati	Dr. Arijit Ganguly	Structure of Linear Maps
30	Ms. Neha Sengar	Miranda House, University of Delhi	Dr. Ritika Gautam	Synthesis and Characterization of substituted anilines, a precursor for ONO based ligands and their transition metal complexes.
31	Mr. Nithish M	Anna University Chennai	Dr. Balaji Devaraju	Spatial – temporal analysis of troposphere characteristics through GPS – Radio occultation.
32	Ms. Oindrila Haldar	Jadavpur University	Dr. Ketan Rajawat	Convolutional Neural Networks for Visual Recognition
33	Ms. Pallavi Singh	Gautam Buddha University	Dr. Yatindra Nath Singh	Development of an android app using peer-to-peer networking with Flutter Framework
34	Ms. Pooja Priyadarshini	NIT, Rourkela	Dr. Apparao Draksharapu	Development of Polyoxometalates based Silver Nanoclusters for various Industrial Applications
35	Mr. Prithu Jayaswal	NIT, Jamshedpur	Dr. Kallol Mondal	Tensile Test of Natural Fibers
36	Ms. Priyasha Das	NIT, Rourkela	Dr. Chunendra K Sahu	Analysis of buoyancy and density driven plumes in porous media
37	Mr. Rajat Sharma	NIT, Hamirpur	Dr. Priyanka Ghose	A Study on Unreinforced and Reinforced Low Volume Roads Based on Finite Element Method Using ABAQUS
38	Mr. Rajkush Kumar	NIT, Agartala	Dr. Anoop Singh	India energy dashboard using Messageix tool for energy planning
39	Mr. Rashi Kumar	IIT, Gandhinagar	Dr. Pragathi P Balasubramani	Understanding translational potential of brain-gut coupling-based interoceptive cognition in mood disorders

40	Mr. Rohit Biswas	IEST, Shibpur	Dr. Tanmoy Mukhopadhyay	Investigation of Simultaneous Stretching- and Compression-Expanding Property of a Novel Mechanical Metamaterial by Changing Material property
41	Mr. Sai Pavan Krishna Nagam	Amrita School of Engineering, Kollam	Dr. Surender Baswana	TA Allocation Problem
42	Ms. Sakshi Dhiman	NIT, Hamirpur	Dr. Vivek Verma	Wound Dressing for Chronic Wounds
43	Mr. Sanjay Kumar A	Bannari Amman Institute of Technology	Dr. Saravanan Matheshwaran	Cloning of RFVT3 Transporter in Potential Expression Vector
44	Mr. Shadil B	Cochin University of Science and Technology	Dr. Nitin Mohan	Intracellular Trafficking Using Advanced Optical Microscopy.
45	Ms. Shamiksha Mishra	NIT, Jamshedpur	Dr. Manindra Agrawal	Network-based intrusion detection system (NIDS)
46	Mr. Sharan Balasubramanian	NIT, Tiruchirappalli	Dr. Balaji Devaraju	Assessing the usability of laser altimetry data obtained over the Himalayan glaciers towards cryosphere monitoring
47	Mr. Shivam Garg	Maharaja Agrasen Institute of Technology	Dr. Ankush Sharma	Micro-phasor Measurement Units (IPMUs) and Its Applications in Smart Distribution Systems.
48	Ms. Shradha Singh	IIT(ISM) Dhanbad	Dr. Amar Agarwal	Damage Quantification at impact craters using microfractures and X – ray diffraction (XRD).
49	Mr. Shrenik Kalambur	Manipal Institute of Technology	Dr. RN Sengupta	A Network Analysis approach to studying Global Financial Markets and understanding markets interconnectedness
50	Ms. Shreya Bharti	NIT, Hamirpur	Dr. Vivek Verma	Towards Wound healing dressings
51	Ms. Shromona Halder	St Xaviers College, Kolkata	Dr. Gurumurthy Neelakantan	When Death Comes Alive – a journey into the portrayal of Death as a character across literature
52	Mr. Shubhadip Paul	NIT, Durgapur	Dr. Krishanu Biswas	Data-Driven Models to Predict Oxidation Resistance for Refractory High Entropy Alloys

53	Mr. Shubham Gupta	IIT, Palakkad	Dr. Ritika Gautam	Elucidation of Reactive Oxygen Species (ROS) generation property of ONO transition metal complexes by Benzoate Hydroxylation
54	Mr. Sidharth Raj	Cochin University of Science and Technology	Dr. Venkata Jayasurya Y	Photon Counting Simulation
55	Ms. Sneham Das	Jadavpur University	Dr. Rahul Mangal	Active Colloids in Viscoelastic Media
56	Ms. Sonali Das	Central University of Kerala	Dr. Rabiul Haque Biswas	Understanding the Optical Stimulated Luminescence dating method of quartz sample
57	Ms. Sreejita Das	SVNIT, Surat	Dr. Supratik Banerjee	Electromotive Force in the Solar Wind
58	Mr. Subramanian RS	NIT, Tiruchirappalli	Dr. Somnath Bhowmick	Studying the effect of magnetocrystalline anisotropy on microstructure using phase field modelling
59	Mr. Sushmayan Trivedi	IEST, Shibpur	Dr. Manjesh Singh	Molecular Dynamics Simulation to Model Contact and Friction in Metallic Coatings
60	Ms. Swati Tiwari	CSJMU, Kanpur	Dr. Onkar Dixit	Software Module Development for Geospatial Interpolation Techniques Using Python
61	Ms. Tamanna	IIT, Kharagpur	Dr. C Chandraprakash	Cagniard-de Hoop Method
62	Mr. Thanmay Jayakumar	VNIT, Nagpur	Dr. Vipul Arora	Audio Search (Spoken Term Detection)
63	Mr. Tushar Agarwal	SVNIT, Surat	Dr. Ashoke De	Study and Implementation of Immersed Boundary Method for Electromechanical Pumping of the Heart using MATLAB Code
64	Ms. V Shilpi	Odisha University of Technology and Research	Dr. Aditya Medury	Estimation of Distance Decay Functions of Work Trips using 2011 Census Data

SURGE-2022 SAARC PARTICIPANT

S.No.	Student Name	Institute Name	Mentor Name	Project Title
1	Mr. Aadarsh Ojha	Hindu College, Delhi University	Dr. Adhip Agarwala	Anyons and their dynamics

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- The students for their enthusiastic and active participation.
- CCE staff for coordinating the SURGE program efficiently.



SURGE-2022 MENTORS



SURGE-2022 BATCH



WITH THANKS

SURGE COORDINATOR

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