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Department of Science and Technology
Government of India

EXSTEMPLAR
Education
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Foundation

INITIATIVE FOR RESEARCH AND INNOVATION IN STEM (IRIS)

REPORT

2021-22

Initiative for Research & Innovation in STEM

IRIS

About IRIS National Fair

Initiative for Research and Innovation in STEM (IRIS) National Fair is a public-private partnership program funded by the Department of Science & Technology (DST), and Broadcom, and implemented by EXSTEMPLAR Education Linkers Foundation. IRIS promotes and nurtures Science Technology Engineering and Mathematics (STEM) research amongst young Indian innovators. It recognizes and rewards outstanding projects and provides a platform for young innovators to get recognized at national and international STEM events.

The IRIS National Fair is conducted annually in India for school students, who compete in 21 subject categories. Winners of the IRIS National Fair go on to represent India at the Regeneron International Science and Engineering Fair (ISEF) held in the USA.

OUR SUPPORTERS

Department of Science and Technology (DST) was established in May 1971, with the objective of promoting new areas of Science and Technology and playing the role of a nodal department for organizing, coordinating, and promoting Science and Technology in the country. The Vision of the department is "To enable India to become a global knowledge power by promoting basic research, development of cutting edge technologies and innovation for globally competitive and inclusive growth to power technology-led economic progress of the society." In India's quest for global competitiveness in science, technology, and trade, initiatives like IRIS play a key role in identifying and nurturing high-caliber human resources and as repositories of national intellectual wealth in the Research and Development sector.

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Broadcom Inc. is a global technology leader that designs, develops, and supplies a broad range of semiconductor and infrastructure software solutions. Broadcom's category-leading product portfolio serves critical markets including data centers, networking, enterprise software, broadband, wireless, storage, and industry. Its solutions include data center networking and storage, enterprise and mainframe software focused on automation, monitoring and security, smartphone components, telecoms, and factory automation. Broadcom focuses its corporate social responsibility on advancing the STEM education pipeline.

BROADCOM

EXSTEMPLAR's vision is to create dynamic experiences by integrating STEM initiatives with real-life challenges. We attempt to bridge gaps in how STEM knowledge is constructed and help bring innovative ideas to reality. We believe that integrated STEM approaches and programs can help deepen learning and create critical thinkers, problem-solvers, and the next generation of innovators who will solve the problems of the future. EXSTEMPLAR's aim is to promote Innovative and Research Based STEM Learning in India in an inclusive and accessible manner.

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Department of Science and Technology
Government of India

Science, Innovation, Research, and Technology are the foundations of a nation's future. Young minds need to be nurtured to channelize their innovative ideas to achieve greater goals for the benefit of society. They should be given access to hands-on learning and provided with the guidance to become inventors of new technology and creators of path-breaking research for India's future.

Young people need to be exposed to such learning environments which stimulate their curiosity and channelize their analytical skills. It is with the help of updated tools, technologies and opportunities that they will be enabled to maximize their potential to become Science Technology Engineering and Mathematics (STEM) implementors and achievers.

Initiative for Research and Innovation in STEM (IRIS) National Fair is a public-private partnership program catalysed and funded by the Department of Science & Technology (DST), Government of India and Broadcom; and implemented by EXSTEMPLAR Education Linkers Foundation. IRIS promotes and nurtures STEM research amongst young Indian innovators. It recognizes and rewards outstanding projects and provides a platform for young innovators to get recognized at national and international STEM events.

The IRIS National Fair is conducted annually in India for school students, who compete in 21 subject categories. Winners of the IRIS National Fair go on to represent India at the Regeneron International Science and Engineering Fair (ISEF) held in the USA. Till 2021, a total of 291 Indian students have participated in ISEF and have won 177 awards and accolades at this unique mega-international event.

The compilation of this booklet is proof of the Scientific and Technological bent of the young minds of our nation, and we are pleased to note that most of the projects have adhered to a very high standard of research and innovation.

We wish all the young innovators success in their future endeavours, and we hope the IRIS platform will enable many more young people from India to shine on the global stage.

Dr Parveen Arora
Head NCSTC,
Department of Science and
Technology, Government of India

BROADCOM

Broadcom India and Broadcom Foundation are honored to support the IRIS National Science Fair. We have been inspired as the young people we have honored at the IRIS Fair for nearly a decade grow into contributing members of society as scientists, engineers, and innovators. Because challenges of the post-pandemic economy have intensified global efforts to educate youth to be digitally literate and use coding with scientific knowledge to ensure the sustainability of
our planet, it will be our honor to continue the Broadcom Coding with Commitment award at IRIS, which continues to be the flagship of Broadcom India's STEM philanthropies.

We are grateful to Sharon Kumar and all the IRIS sponsors, mentors, judges, and volunteers who make the IRIS Fair the most prestigious science competition in India. Not only does IRIS touch students during competition, but throughout the year, in partnership with other prestigious STEM NGOs supported by Broadcom India.

The Broadcom Foundation is placing new emphasis on the importance of Leadership, Initiative, and Civic Awareness through STEM through an emphasis on the 17 Sustainable Development Goals of the United Nations. Because India seeks to be a leader in sustainability, we look forward to the exciting ideas that young people will present in future IRIS competitions and watching them realize their dreams and aspirations as young scientists, engineers, and innovators.

PAULA GOLDEN
President, Broadcom Foundation

EXSTEMPLAR
Education
Linkers
Foundation

This year's performance of Team India at the Regeneron International Science and Engineering Fair (ISEF) 2022 has been the best one ever and we are both humbled and proud.

The Initiative for Research and Innovation in STEM (IRIS) is a platform where young innovators come together to showcase their projects powered by unique innovation and research, to compete for a place on Team India to the Regeneron International Science and Engineering Fair (ISEF).

We are humbled that despite all odds and COVID 19 challenges notwithstanding, the Team from India could make it to ISEF- and extremely proud of the stellar performance of our young innovators who indeed made the other 79 nations present at ISEF sit up and applaud for India. Bringing in a total of 13 Grand Awards and 9 Special Awards is certainly spectacular! This report showcases the sheer grit and determination of all who were involved in ensuring the success of IRIS 2021-22.

A huge shout out and heartfelt thanks to the members of the IRIS Scientific Review Committee for their dedicated involvement with the participants' projects - be it in online outreach webinars across the 21 IRIS subject categories; evaluation; online judging; mentorship or monitoring of progress.

The report is a testimonial of the STEM journey that students from Class 5 to Class 12, from various geographies across India, have set out on through IRIS, and we at EXSTEMPLAR are privileged to have facilitated this.

IRIS is funded and encouraged by Broadcom and Department of Science and Technology, Government of India, and I would like to take the opportunity to sincerely thank both these organizations for their involvement and support of this program.
It is when innovation and creativity work in tandem that path breaking ideas are generated!

Hearty Congratulations to all STEM enthusiasts featured in this report; may you continue to Observe, Question, Research and Design, for a better tomorrow and a better world.

Sharon E Kumar
Fair Director-
Initiative for Research and Innovation in STEM
Chief Operations Officer-
EXSTEMPLAR Education Linkers Foundation

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Virtual IRIS National Fair 2022

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January 15-21, 2022

Virtual
IRIS National Fair 2022

IRIS National Fair 2022 was held virtually from January 15-21. The 7-day event was a synergy of project exhibition, evaluation, workshops, interactive sessions, entertainment capsules and online games which were attended by over 26000+ Students, Teachers, STEM Enthusiasts; Government Officials and Corporate representatives.
110 projects by 135 students competed for a chance to represent India at the Regeneron International Science and Engineering Fair 2022 and for a variety of Special Awards. IRIS Grand Award Winners have been representing the country since 1999 at the International Science and Engineering Fair which is the world's largest international pre-college science competition.
Since 1999, a total of 314 students have participated in ISEF courtesy of their Winning at IRIS National Fair, and have won over 202 awards and accolades.

IRIS National Fair 2022 Virtual Platform - Lobby

Despite the pandemic situation, the IRIS website www.irisnationalfair.org received 1800+ project synopses online for evaluation towards participation in the Virtual IRIS National Fair 2022; of these 110 projects were invited to participate online in the yearly competition.

The Fair was attended by over 26,000+ Students, Teachers and Science enthusiasts between 17 & 21 January when it was opened virtually to the Public. There were Plenary Sessions and informative STEM talks by eminent National and International Scientists, Engineers and Mentors.

The event was attended by several IRIS/ ISEF Alumni who freely volunteered their time and helped to make the Fair a success.

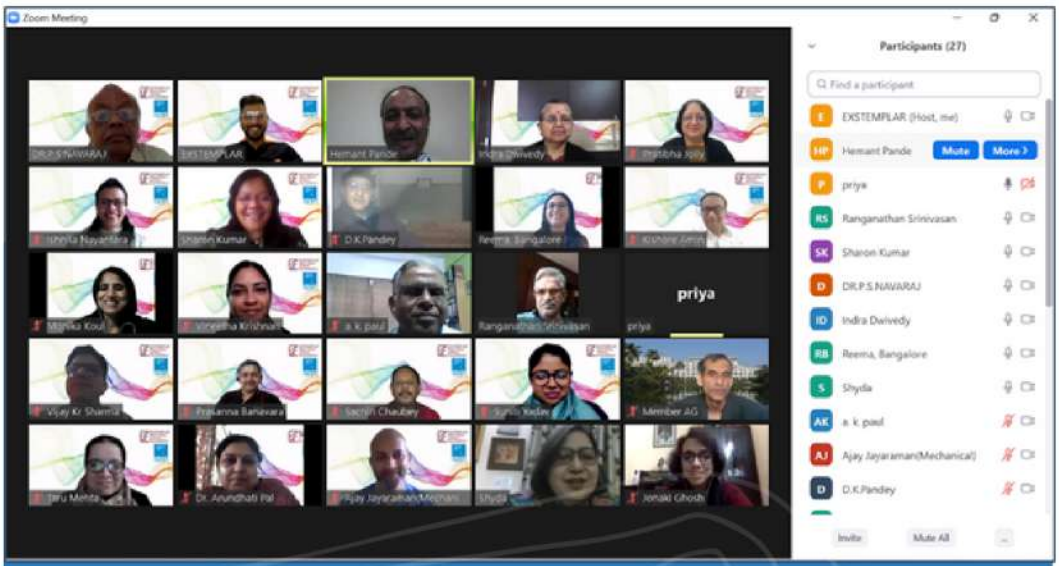
Virtual Auditorium and Virtual Exhibition Area

January 15-16, 2022

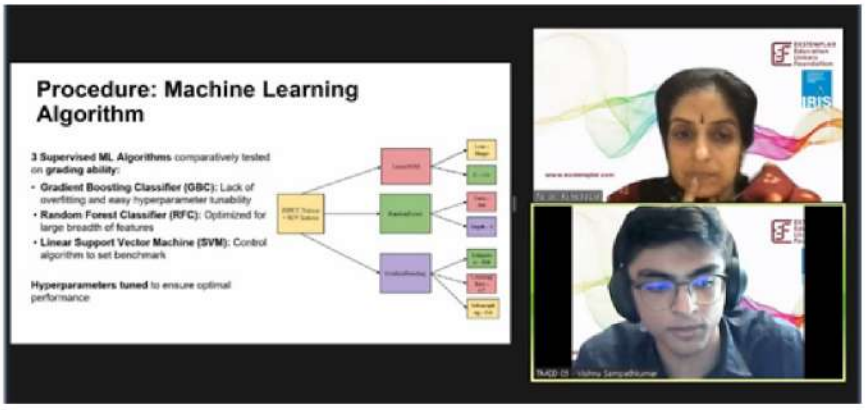
IRIS 2022 Virtual Judging

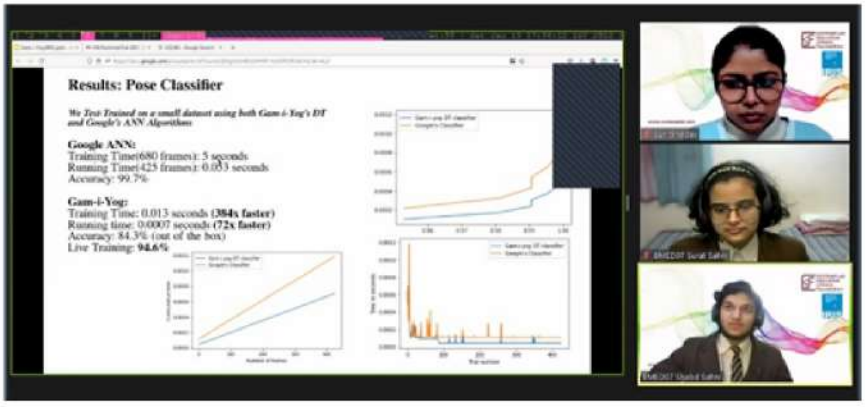
In order to ensure a scientific edge to the program, with the help of the Department of Science and Technology, IRIS National Fair engages a Scientific Review Committee which consists of eminent scientists and professionals from reputed colleges, government and private STEM institutions of the country, Corporates and Industry bodies. This committee conducts project evaluations, leads the judging at the IRIS National Fair and provides mentorship to the selected candidates for the international competition.

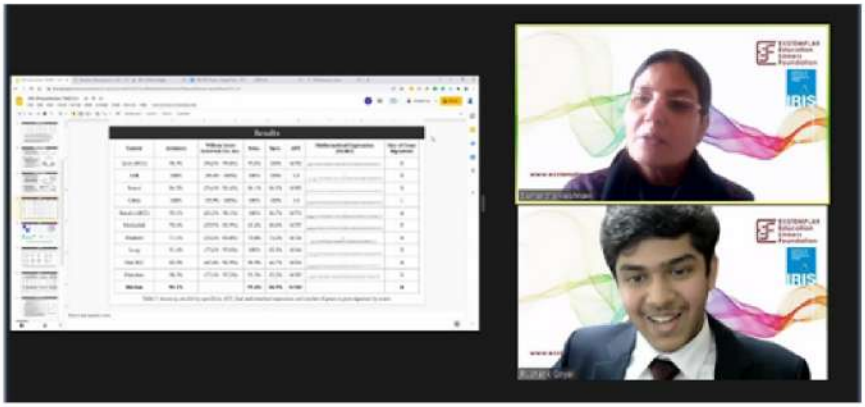
A seamless Virtual Judging was conducted for each of the 110 projects and 135 participants during a two-day online process. Judges and members of the IRIS Scientific Review Committee spent time in virtual rooms with individual projects to evaluate them in pre-determined time slots on January 15-16, 2022.



IRIS Judges & Scientific review committee during orientation


Procedure: Machine Learning Algorithm
3 Supervised ML Algorithms comparatively tested on grading ability:
• Gradient Boosting Classifier (GBC): Lack of overfitting and easy hyperparameter tunability
• Random Forest Classifier (RFC): Optimized for large breadth of features
• Linear Support Vector Machine (SVM): Control algorithm to set benchmark
Hyperparameters tuned to ensure optimal performance


Results: Pose Classifier
We Test Trained on a small dataset using both Gam-i-Yog's DT and Google's ANN Algorithms
Google ANN:
Training Time(680 frames): 5 seconds
Running Time(425 frames): 0.053 seconds
Accuracy: 99.7%
Gam-i-Yog:
Training Time: 0.013 seconds (384x faster)
Running time: 0.0007 seconds (72x faster)
Accuracy: 84.3% (out of the box)
Live Training: 94.6%



January 17, 2022

STEM Sessions

Being Mindful Of The Environment

Speakers:

Ms Taru Mehta - Fellow, Environment Education and Awareness, The Energy & Resources Institute (TERI),
Ms Shweta Thakur - CEO, Wildermart
Dr Kshipra Mishra - President STE & Ex Addl. Dir., DIPAS(DRDO) Delhi

Ms. Taru Mehta, Ms. Shweta Thakur and Dr. Kshipra Mishra during the session - Being mindful of the Environment

Broadcom Masters India Winners Speak

Speakers:

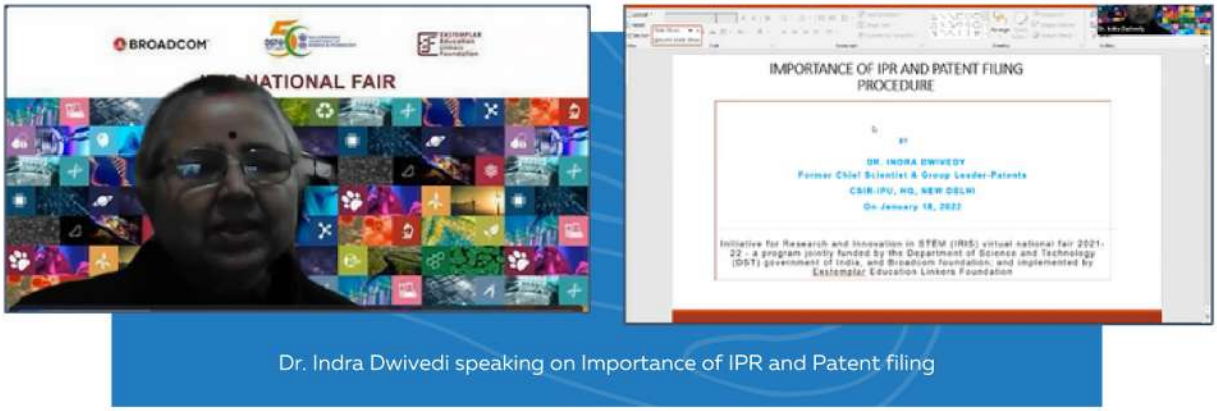
Madhura Kumar & Aarush Suryanarayan

Broadcom MASTERS Alumnus in discussion, Madhura Kumar and Aarush Suryanarayan

Learn How To Protect Intellectual Property

Speakers:

Dr. Indra Dwivedi, Scientist CSIR (Retd.), New Delhi



Dr. Indra Dwivedi speaking on Importance of IPR and Patent filing

The Motivation Behind Mentoring Innovations For IRIS National Fair

Speakers:

IRIS Scientific Review Committee members
Dr. Pallavi K, Dr. Arundhati Pal, Dr. Sunil

The Motivation Behind Mentoring Innovations For IRIS National Fair

Speakers:

IRIS Scientific Review Committee members
Dr. Pallavi K, Ms Vineetha C, Dr. Monika Kaul, Mr. Sachin Chaubey, Dr. Arundhati Pal, Dr. Sunil Wanchoo

IRIS Scientific Review Committee members discussing the Motivation Behind Mentoring Innovations For Iris National Fair

Alumni Over The Years

Speakers:

IRIS Alumnus in discussion

Yoga And STEM

Speakers:

Mr. Sujit Sonkar

Expert, Sutra Yoga and Healing

Art; Music And STEM

Speakers:

Ms. Anjani Gandhi, Ms. Divya Babu & Ms. Arushi Pant

Alternate Careers

Speakers:

Mr Priyansh Parekh

January 21, 2022

IRIS National Fair 2022
Virtual Exhibition

Opening Ceremony

Opening note
Mr. Sujit Banerjee
Scientist F, Department of Science and Technology (DST), Govt. of India

Innovation in this time of uncertainty, a Special Address
Mr. Jiju George
Country HR Head and Board of Director, Broadcom, India

Appreciating the power of Research and Innovation in STEM', a Special Address
Ms. Paula Golden
President, Broadcom Foundation

Looking beyond Innovation
Mr. Saad Nasser
Broadcom MASTERS winner and Co-Founder ATI Motors

Vote of Thanks
Ms Sharon E Kumar
Fair Director IRIS & COO - Exstemplar

Advocating The Role Of Women In STEM

Dr. Ayesha Chaudhary

Officer on Special Duty (OSD), Office of the Principal Scientific Adviser to the Government of India

STEM In Sports

Mr Cyrus Poncha

Dronacharya Awardee
Vice President of the Asian Squash Federation (ASF)

The Importance Of Innovation In India

Dr. Biswajit Saha

Director-Vocational Skills and Training, CBSE

Scholarship Opportunities Session - RSI

Mrs. Joann P. DiGennaro

President, Center for Excellence in Education

Scholarship Opportunities Session; FFE

Mr. Ram Kolavennu

COO – Foundation for Excellence India Trust

Scholarship Opportunities Session; RISE

RISE 2021 scholarship beneficiary and IRIS alumni-

Aabhas Senapati

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Initiative for Research & Innovation in STEM

IRIS

Special Award Winners-IRIS 2022

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Special Award Winners - 2022

S No.	Special Award	Project Title	Participants Name	School Name
1	The National Geographic Society	Portagait - A Prototype of a Portable Device to Quantify And Compute Gait Analysis Parameters Of Quadrupeds	Hridank Garodia & Arnav Anil Kejriwal	Dhirubhai Ambani International School & Singapore International School, Mumbai, Maharashtra
2	U.S. Agency for International Development (USAID)	Averting Frustration in Geriatric Patients Through Identification, 3D Mapping and Navigation Using Machine Learning	Stuti Bhatia & Alekha Malhotra	Cathedral and John Connon School, Mumbai, Maharashtra
3	American Psychological Association	Auracle: An Ai Game-Based Approach To Autism Therapy	Mrinal Jain	National Public-School HSR Layout, Bengaluru, Karnataka
4	Ricoh USA, Inc.	Landslide Susceptibility Prediction Using Integrated Gis and Ml	Rudraksh Mohapatra	Delhi Public School Vasant Kunj, New Delhi, Delhi
5	American Meteorological Society	Algal Capsules for Carbon Sequestration	Shankar Narain Subramaniam	Primus PU College, Bengaluru, Karnataka
6	Association for Women Geoscientists	Environmentally Sustainable Diaper Blocks	Devika Ramkumar & Disha Tendulkar	P. G. Garodia School (ICSE), Mumbai, Maharashtra
7	American Meteorological Society	Sustainable Formation of Bio-Coal and Wood Vinegar from Agricultural Waste I.E. Parali	Mahi Singhal	SMS Dutta Memorial Nosegay Public School, Khatima, Uttarakhand
8	Yale Science and Engineering Association	Improving Lift-To-Drag Ratio of Symmetric Airfoils to Increase Aerodynamic Efficiency	Chaitanya Ongole	Deens Academy, Bengaluru, Karnataka
9	ASM Materials Education Foundation	A Systematic Study of Nickel Oxide Nanoparticle Synthesis for Supercapacitors	Abhiram Cherukupalli	Disha Delphi Public School, Kota, Rajasthan
10	Broadcom Masters	Effect Of Change in The Angle on Heighway Dragon Fractal	Anushka Tonapi	Sri Kumaran Children Home, Bengaluru, Karnataka
11	Mu Alpha Theta	A Realistic, Discrete Sirqv Model to Capture Infection Dynamics: (I) Effect of Quarantining and Vaccination Rollout, (Ii) Dynamics In A Single Population Centrum, And (Iii) Asymmetric Migration Across Two Or More Population Centra.	Wyndia Ohm	Legacy School, Bengaluru, Karnataka
12	Society for In Vitro Biology	Environmental Influence on Biochemical Parameters of Fermented Cocoa (Theobroma Cacao L.) Beans	Advay Iyer	Sanskriti School, Gurugram, Haryana

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Initiative for Research & Innovation in STEM

IRIS

Grand Award Winners-IRIS 2022

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Grand Award Winners - 2022

S No.	Project Title	Participant Name	School Name
1	Averting Human-Elephant Conflict Using Machine Learning on Elephant Vocalizations	Chinmayi Ramasubramanian	Sri Kumaran Children's Home - CBSE, Bengaluru, Karnataka
2	A Novel Study of The Bio-Insecticidal Properties of Annona Reticulata	Sarvesh Prabhu	FIITJEE Junior College, Hyderabad, Telangana
3	Udān	Anagha Samapthkumar	National Public School, Indiranagar, Bengaluru, Karnataka
4	Multifunctional Activity of Graphene Oxide-Based Nanoformulations with Malathion And Endosulphan Against Aedes Aegypti.	Devaj Gupta	DPS International, Saket, New Delhi, Delhi
5	Designing Of Nitrogen Doped Melamine Foam-Graphene-Cnt-Metal Oxide Heterostructure Photocatalyst for Industrial Waste Management	Rishita Ghosh	Learning Paths School, Mohali, Punjab
6	Xpgan: A Novel Patch-Based Generative Adversarial Network for Super-Resolution Of X-Rays	Aria Vikram	National Public School Indiranagar, Bengaluru, Karnataka
7	Mouthscope - Autonomous Detection of Oral Precancerous Lesions Using Fluorescent-Imaging	Aditya Mehta & Maanav Kothari	Dhirubhai Ambani International School, Mumbai, Maharashtra
8	On Worker-Optimal Matchings in Many-To-Many Markets With Indifferences	Niranjan Baskaran	Gateway International School, Chennai, Tamil Nadu
9	An Elementary Proof of Ramanujan'S Identity For Odd Zeta Values And Its Extensions	Sarth Prashant Chavan	Aditya English Medium School, Nashik, Maharashtra
10	Preparation Of a Superhydrophobic and Oleophilic Membrane Inspired By Taro Leaves For Oil-Water Separation	Sara Varghese & Devika Girish	St.Peter's Senior Secondary School, Kadayiruppu, Perumbavoor, Kerala

Grand Award Winners - 2022

11	P.Stutzeri Vr2004 For Green Synthesis Of Zno Loaded Nanocomposite For Remediation Of Xenobiotics In Aquatic Systems	Vishwadeep	Shiva Niketan School, Tiruppur, Tamil Nadu
12	Hydrodynamical Analogs of Quantum Tunneling	Ahitagni Das	Delhi Public School, Siliguri, West Bengal
13	Spatio-Temporal Generation of Morphological Plant Features for Yield Prediction Before Harvest from Visual Image Input Using Progressively Growing Gans	Dhruv Sheth	Pace Junior Science College, Powai, Mumbai, Maharashtra
14	Penden: A Novel, Deep Learning Based Approach to Make the Internet More Accessible	Abhijith Chandran	Mahindra United World College of India, Pune, Maharashtra
15	Neural Layer Bypassing Network - A Novel Neural Network Architecture to Increase the Speed of Forward Propagation Without Sacrificing Accuracy, Network Structure, or CPU Load	Amogh Palasamudram	The International School, Bengaluru, Karnataka
16	Enhancing The Security of Websites with Unique Virtual Identification Code Steganography	Krish Yadav	MKH Sancheti Public School, Nagpur, Maharashtra
17	Novel Ai Powered Sign Language Translator	Nand Vinchhi	National Public School Koramangala, Bengaluru, Karnataka
18	A Quantum Machine Learning-Based Framework for Early Cancer Diagnosis Using Transcriptome Profiles	Rushank Goyal	7i World School, Bhopal, Madhya Pradesh
19	Gliomassist: Automated Glioma Diagnosis and Grading with C11-Met Pet	Vishnu Ram Sampathkumar	National Public School, Indiranagar, Bengaluru, Karnataka
20	Flikcer: Resolution of Photosensitive Epileptic Visual Content with Spatio-Temporal Luminance Frequency Analysis	Jaisal Kothari & Ashay Srivastava	Amity International School, Saket & Delhi Public School, R.K Puram, New Delhi, Delhi

Initiative for Research & Innovation in STEM

IRIS

Analytics on IRIS National Fair Finalists 2021-22

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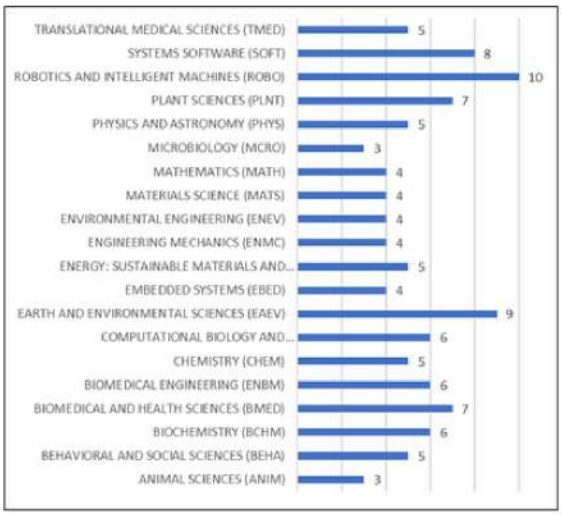
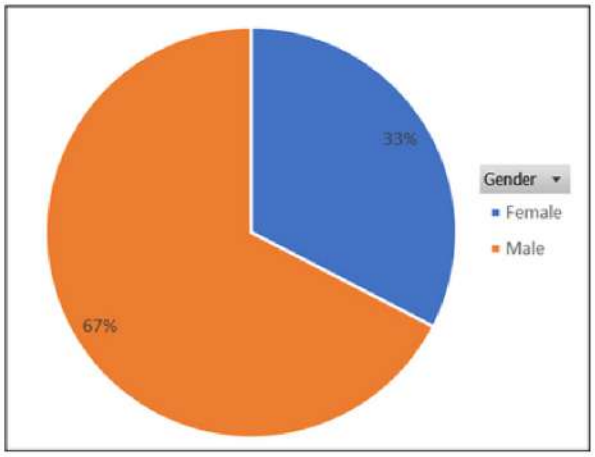
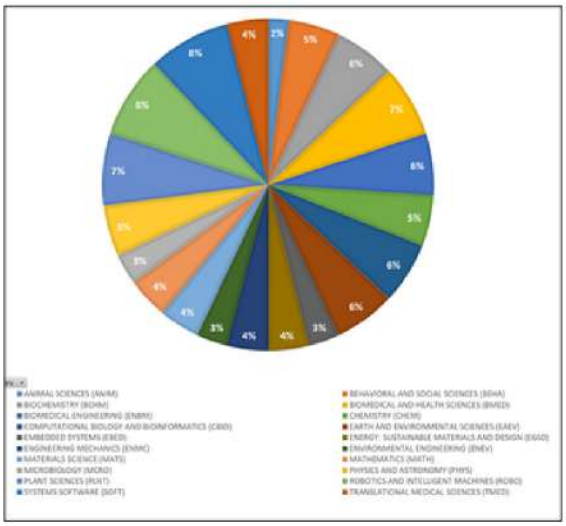
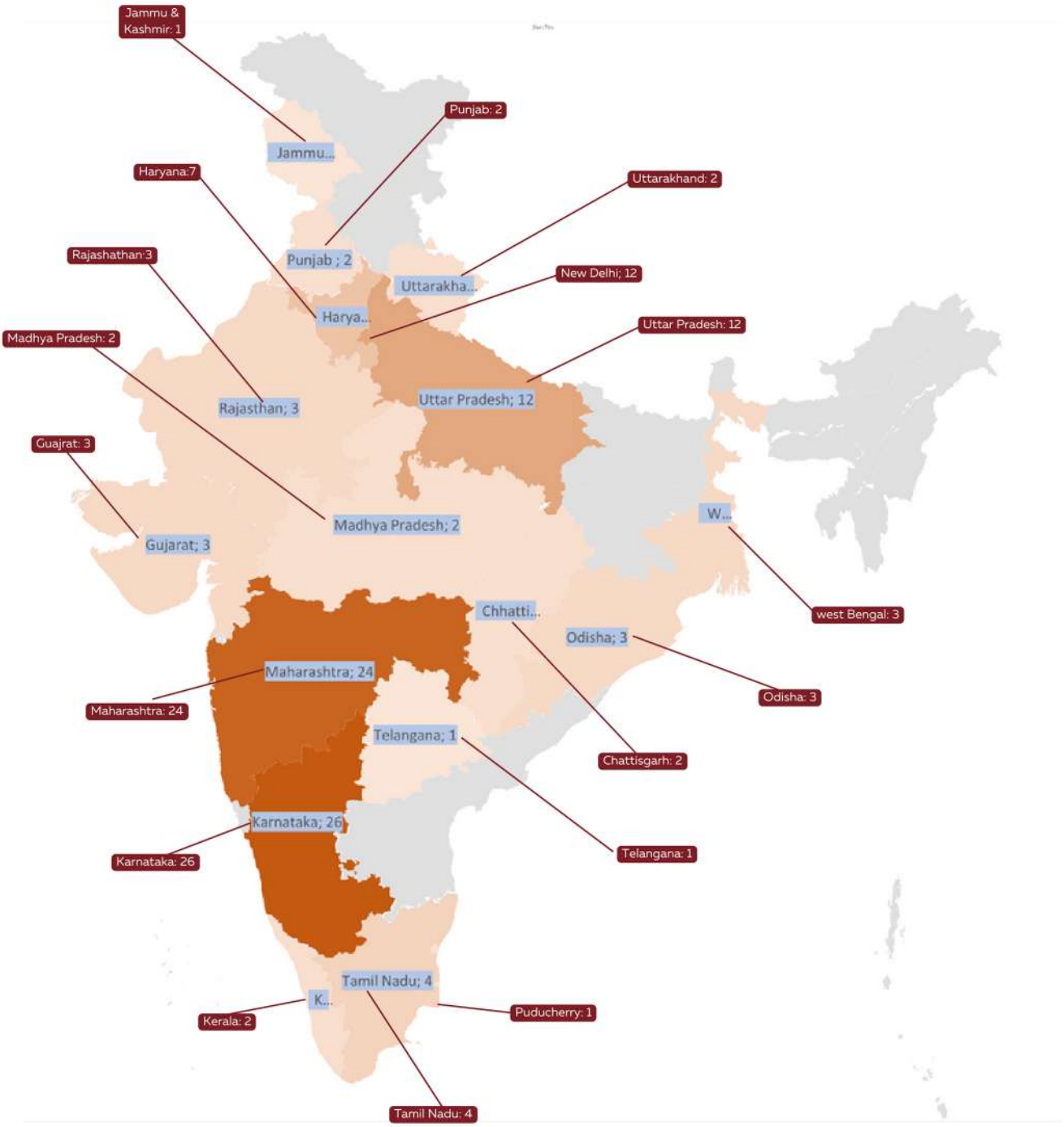
Subect & Gender-wise Distribution



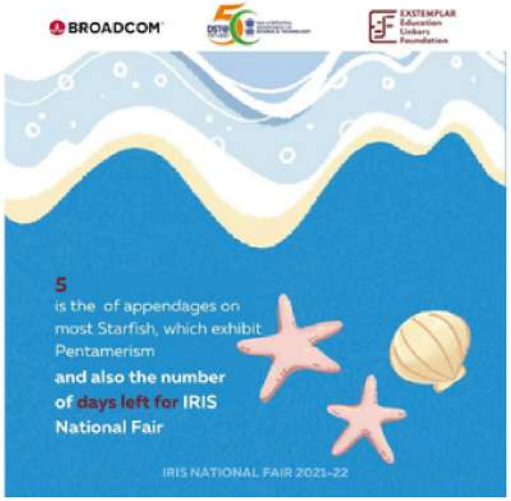




Participation Across Various States

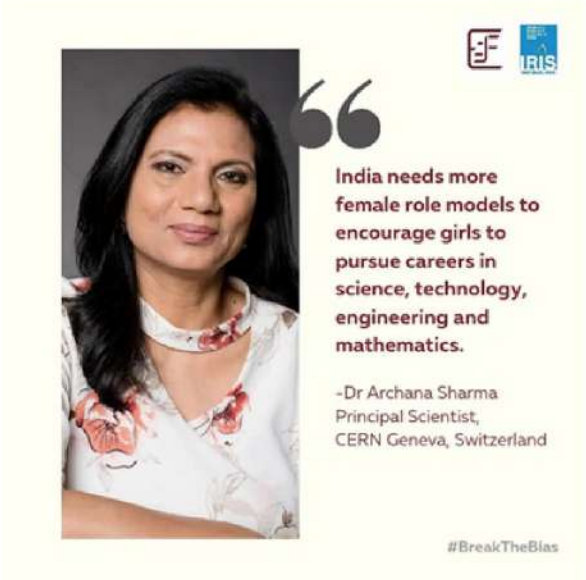


Social Media Posts:
Pre IRIS National Fair 2022



Social Media Posts:
IRIS National Fair 2022

Social Media Posts:
Post IRIS National Fair 2022



Virtual IRIS National Fair 2022
AV (Scan here)

Initiative for Research & Innovation in STEM

IRIS

Community And Schools Outreach Through Workshops And Subject Specific Webinars – Report 2021-22

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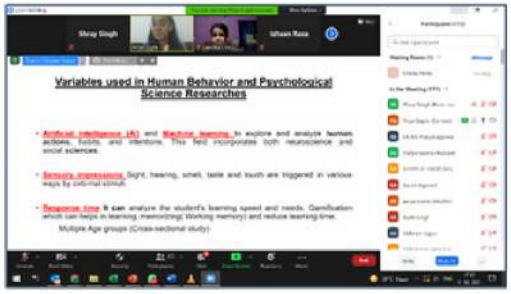
Community And Schools Outreach Through Workshops And Subject Specific Webinars - Report 2021-22

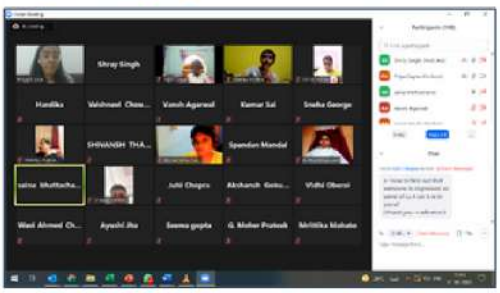
The Initiative for Research and Innovation in STEM (IRIS) is a research-based science initiative for students of Class 5 to 12. It promotes science and research amongst young Indian innovators and recognizes and rewards their outstanding projects based on Science, Technology and Innovation.

IRIS provides a platform for young geniuses to represent India at the Regeneron International Science and Engineering Fair (ISEF) conducted by Society for Science and the Public in USA every year.

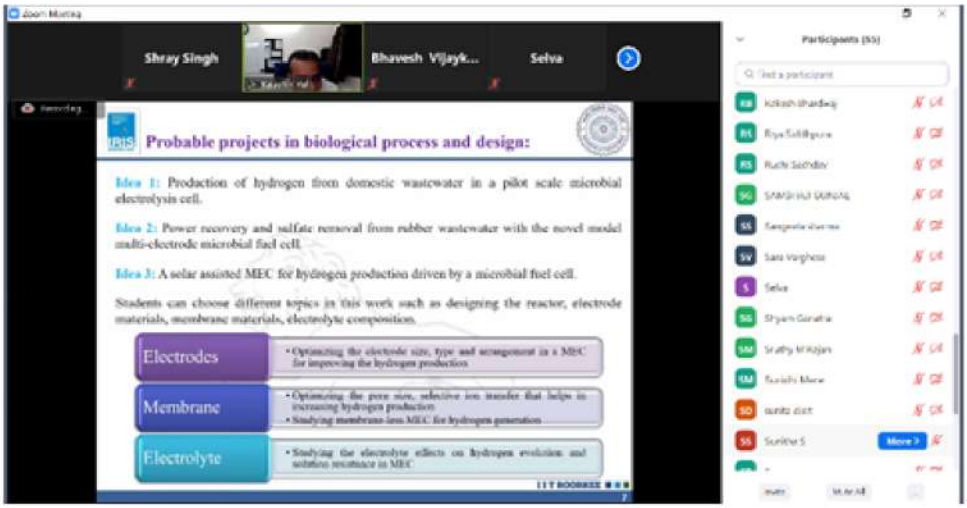
IRIS reaches out to various schools/ institutions in order to communicate the importance of STEM, the motive is to plant a seed of innovation among young students and show them the path of research through these workshops and webinars. IRIS has reached out to over 4.5 million students through its direct and indirect outreach and collaboration with 5 major STEM Fairs of the country.

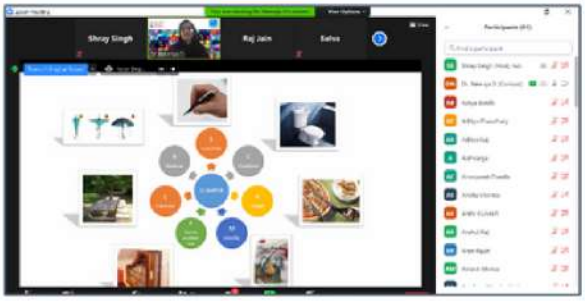
Despite the COVID 19 pandemic, the IRIS team continued in its outreach efforts switching to an online mode and started a series of Online Subject Category Webinars.
With the help of subject matter experts, 37 such webinars were conducted. These informative & interactive sessions taken by Senior scientists gave participants an outlook on various categories of research in a particular subject; focused on the use cases related to the subject topic; shared examples of work that has been done in the past; introduced upcoming research areas in the subject and discussed the kind of projects students can work-on under these topics.

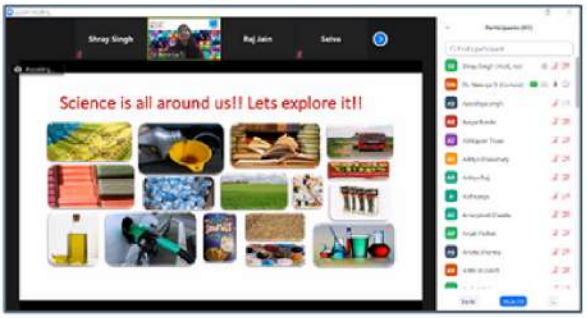




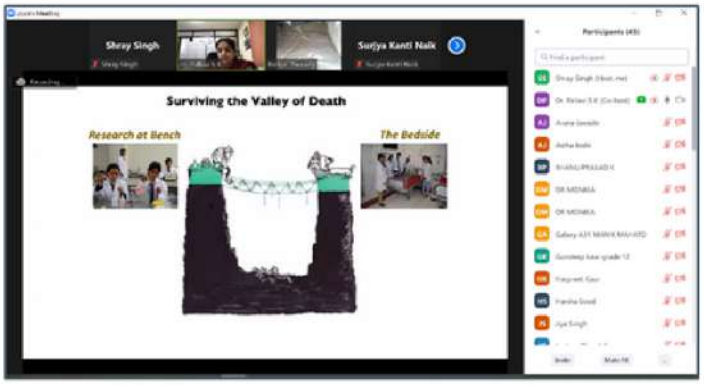
These sessions were interactive and participants were given time to ask questions related to participation in the science fair, preparation of science projects, subject related queries etc. Over a thousand students and teachers attended these online webinars till date.

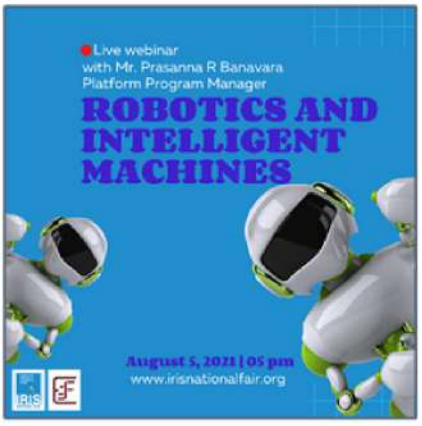





Science is all around us!! Lets explore it!!

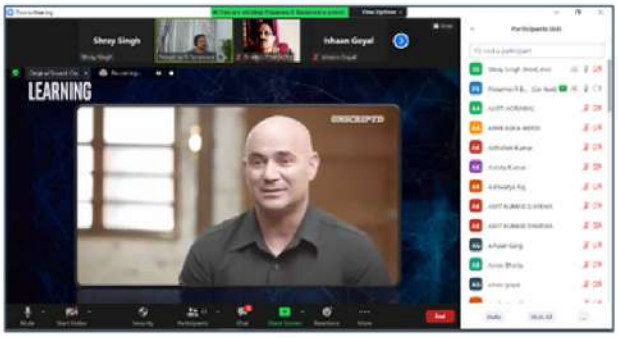

Live webinar
with Dr. Pallavi Kshetrapal
Asst. Professor at THSTI, Faridabad on
TRANSLATIONAL MEDICAL SCIENCE
August 6, 2021 | 05 pm
www.irisnationalfair.org


Surviving the Valley of Death
Research at Bench
The Bedside


Live webinar
with Mr. Prasanna R Banavara
Platform Program Manager
ROBOTICS AND INTELLIGENT MACHINES
August 5, 2021 | 05 pm
www.irisnationalfair.org


INTRO-OVERVIEW OF THE INTELLIGENT MACHINE
SENSE
PLAN
ACT
Computer vision (cameras)
Smarter artificial intelligence
Comfort planning
Safety validation (RSS)
Trajectory validation and issuance
Crowdsourced mapping (REM™)
RADAR
LIDAR

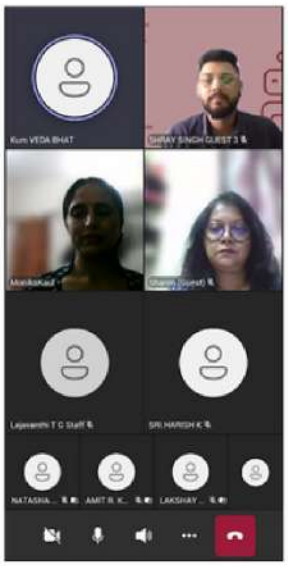

INTRO-OVERVIEW OF THE INTELLIGENT MACHINE


LEARNING

Webinar Videos
(Scan Here)

IRIS Webinars and Workshops

IRIS reaches out to students; schools; teachers with the objective to nurture them towards research driven activities, The focus is on students to take interest in STEM learning and come up with innovative research-based ideas. IRIS conducted online workshops targeting over 5000 students; 500+ teachers from 100+ schools. These were again informative & interactive sessions taken by Senior scientists giving participants an outlook on how they can begin their research in a particular field and come up with innovative ideas.



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Initiative for Research & Innovation in STEM

IRIS

Project Evaluation Meet 2021

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November 21-24, 2021

Project Evaluation Meet 2021

IRIS receives a large number of project entries from student participants on its online submission portal. Students submit their innovative project abstracts on IRIS website as per required questions –

-Student Profile (includes contacts, school details etc)
-Project Details (includes subject category, project synopsis
-Detailed Introduction and objectives, Innovation, Methodology, Results and conclusions and Acknowledgement and reference links
-Guide Teacher Details

Exstemplar conducts a project evaluation meet in order to select top 100 projects from entries received. This process starts with the invitation of select jury members to evaluate these projects. The Jury members include Scientific review committee members along with subject experts across a variety of 21 subject core competencies.

Project Evaluation Criteria:-

Judging Criteria: Science Projects	Judging Criteria: Engineering Projects	Select Marks
I. Research Question (20 Marks)	**I. Research Question (20 Marks)**	Maximum Marks – 20
Clear and focused purpose	Description of a practical need or problem to be solved	
Identifies contribution to field of study	Definition of criteria for proposed solution	
Testable using scientific methods	Explanation of constraints	
II. Design and Methodology (25 Marks)	**II. Design and Methodology (25 Marks)**	Maximum Marks - 25
Well designed plan and data collection methods	Exploration of alternatives to answer need or problem	
Variables and controls defined, appropriate and complete	Identification of a solution	
	Development of a prototype/model	
III. Execution: Data Collection, Analysis and Interpretation (25 Marks)	**III. Execution: Construction and Testing (25 Marks)**	Maximum Marks - 25
Systematic data collection and analysis	Prototype demonstrates intended design	
Reproducibility of results	Prototype has been tested in multiple conditions/trials	
Appropriate application of mathematical and statistical methods	Prototype demonstrates engineering skill and completeness	
Sufficient data collected to support interpretation and conclusions		
IV. Creativity, Innovation & Feasibility (20 Marks)	**IV. Creativity, Innovation & Feasibility (20 Marks)**	Maximum Marks – 20
Project demonstrates significant creativity in one or more of the above criteria	Project demonstrates significant creativity in one or more of the above criteria	
Feasibility of the Research	Feasibility of the Concept	
V. Project Demonstration & Presentation (10 Marks)	**V. Project Demonstration & Presentation (10 Marks)**	Maximum Marks - 10
Evaluation on Students' Audio/Visual (AV) given in attachment	Evaluation on Students' Audio/Visual (AV) given in attachment	

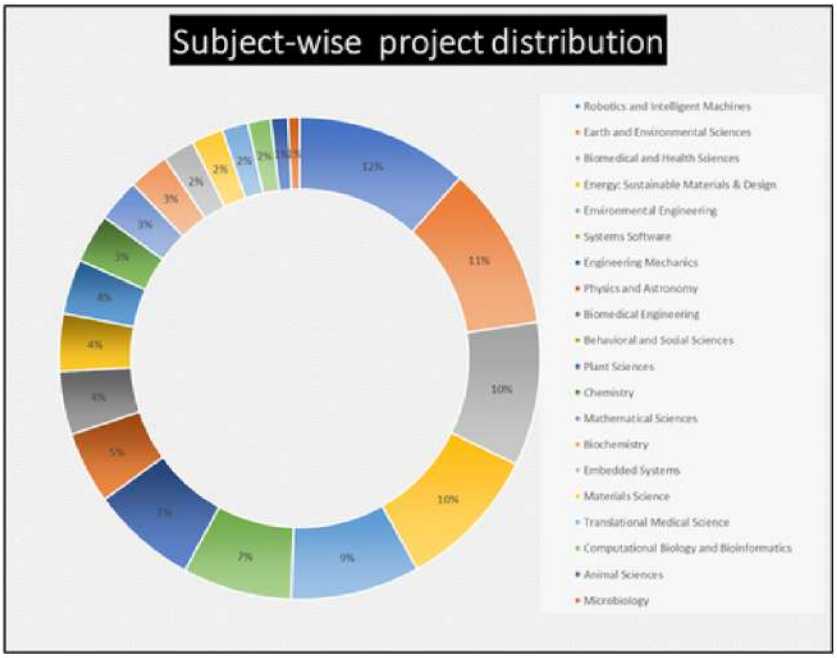
IRIS 2022 Project Evaluation Committee -

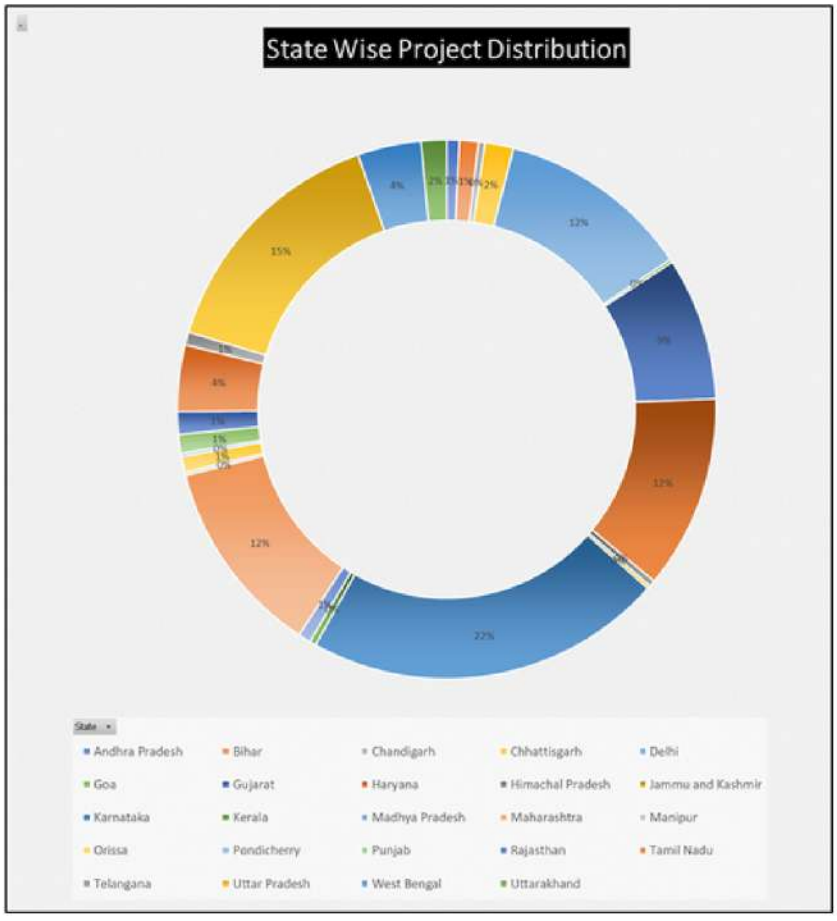
S No.	Name	Affiliation	Subject Category
1	Dr. Arundhati Pal	Serampore College, Kolkata	Plant Sciences
2	Dr. A Srinivasan	Professor, IIT, Guwahati	Physics and Astronomy
3	Dr. Hemant Pande	Retd Prof. Hislop College, Nagpur	Chemistry
4	Dr. Kaushik Pal	Professor, IIT, Roorkee	Engineering Mechanics
5	Dr. Neeraja Dashaputre	Asst. Professor, IISER, Pune	Chemistry
6	Dr. Sultan Ahmed Ismail	Retd Prof. New College, Chennai	Earth and Environmental Sciences
7	Dr. Sunil Wanchoo	Professor, Mata Vaishnodevi University, Jammu	Engineering Mechanics
8	Mr. Sachin Chaubey	Engineering Manager, Intel	Robotics and Intelligent Machines
9	Dr. T V Venkateswaran	Scientist 'F', Division Head: Science Communication, Vigyan Prasar	Mathematical Sciences
10	Dr. Monika Koul	Asst. Professor, Delhi University, New Delhi	Plant Sciences
11	Dr. Kishore Amin	Scientist, ACTREC, Tata Memorial Centre, Mumbai	Biomedical and Health Sciences
12	Dr. Shubha Tripathi	BAMS, Provate Practice Doctor	Biomedical and Health Sciences
13	Mr. Prasanna R Banavara	Engineering Manager, Intel	Robotics and Intelligent Machines
14	Dr. Pallavi Kshetrapal	Ramalinga swami Fellow, Pediatric Biology Center (PBC), Translational Health Science and Technology Institute, Faridabad	Translational Medical Science
15	Dr. S Ranganathan	HOD, Department of Metallurgical Engineering, Jain University, Bangalore	Materials Science

16	Dr. A K Paul	Professor (Retd), Department of Botany, University of Calcutta	Microbiology
17	Dr. Jonaki Ghosh	Asst. Professor, Lady Sriram, New Delhi	Mathematical Sciences
18	Dr. Asim M Auti	Senior Teaching Associate Indian Institute of Science Education and Research (IISER), Pune	Computational Biology and Bioinformatics
19	Dr. Vijay Kumar	Asst. Professor, NIT Srinagar	Physics and Astronomy
20	Ms. Vineetha Chidambarakrishnan	Senior R&D Software Engineer, Broadcom India	Systems Software
21	Dr. D K Pandey	Scientist 'F' (Retd.) Department of Science and Technology, Government of India	Plant Sciences
22	Dr. Priya Gupta	Asst. Professor, Amity University	Behavioral and Social Sciences
23	Dr. Yogananda C S	Professor Mathematics	Mathematical Sciences
24	Mr. Saral Baweja	Doctoral Researcher, Institut für Anorganische Chemie Fakultät für Chemie & Mineralogie, Universität Leipzig, Germany	Chemistry
25	Dr. Paul Douglas	Associate Dean, International Affairs, Andhra University	Environmental Engineering
26	Dr. Suniti Yadav	Asst. Professor, Delhi University, New Delhi	Biomedical and Health Sciences
27	Dr. Jonathan Pillai	Adjunct Professor Center for Biodesign, Translational Health Science and Technology Institute	Biomedical Engineering
28	Dr. Pratibha Jolly	Principal (Retd), Miranda House, University of Delhi, New Delhi	Physics and Astronomy
29	Dr. Anupam K Singh	Dean, Engineering, Indus University, Ahmedabad	Environmental Engineering
30	Ms. Shyda Rana	Faculty, Army Welfare Education Society	Behavioral and Social Sciences

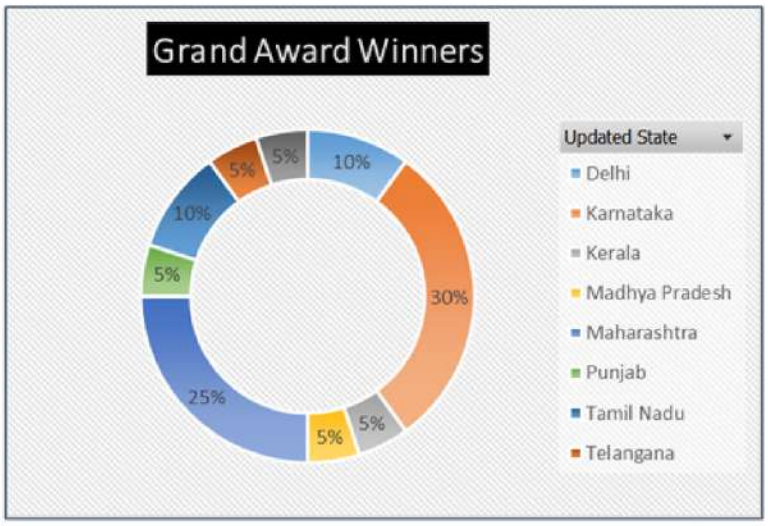
31	Ms. Taru Mehta	Faculty, TERI, New Delhi	Environmental Engineering
32	Dr. Samantha Vaishnavi	Assistant Professor; Central University of Jammu	Computational Biology and Bioinformatics
33	Dr. P.S.Navaraj Yadav	Principal, Annai Fathima College of Arts, Madurai	Earth and Environmental Sciences
34	Mr. Ajay Jayaraman	Engineering Manager, Grey Orange, Bangalore	Robotics and Intelligent Machines
35	Ms. Ganga Shinghal	Research Fellow, Indian Institute of Remote Sensing (IIRS), Indian Space Research Organization (ISRO)	Physics and Astronomy

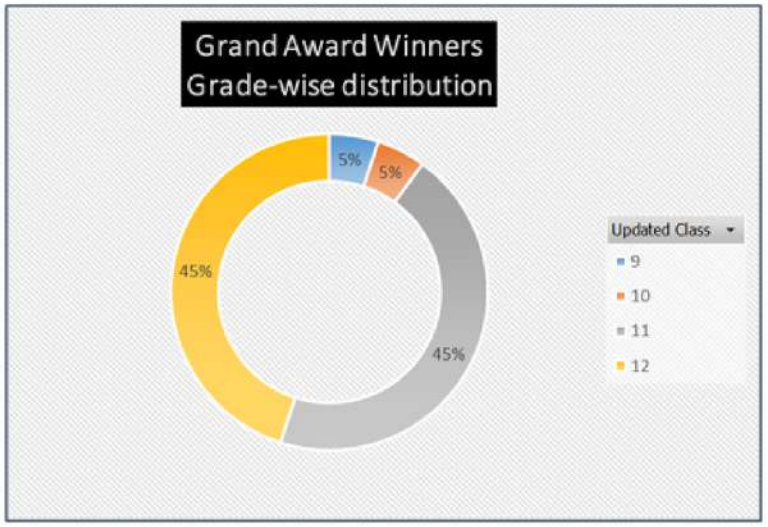
Evaluation Analysis-

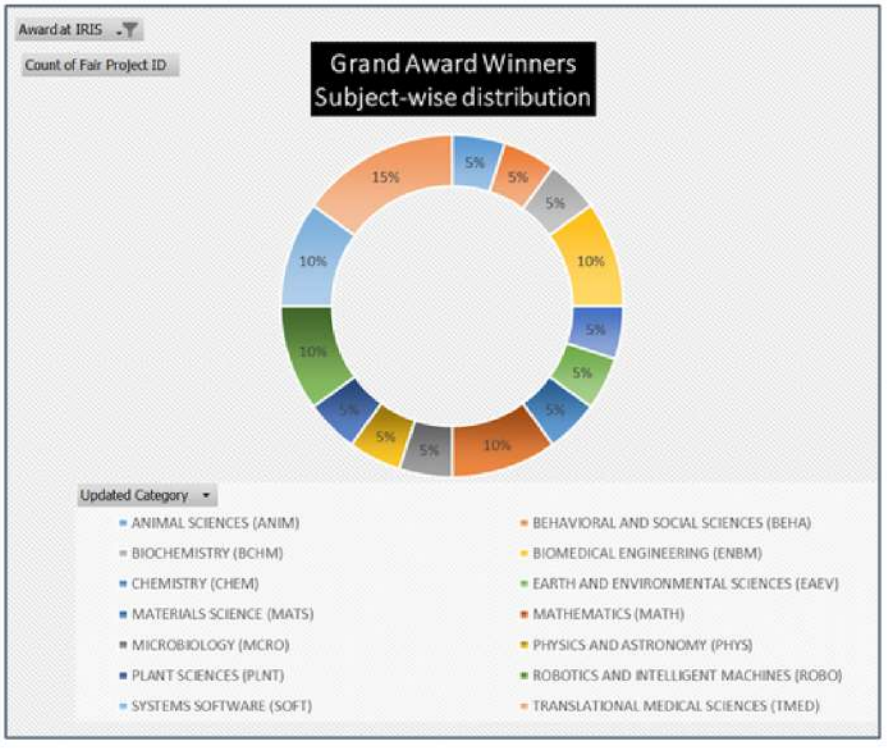




Evaluation Analysis-







Mentoring Camps For ISEF Student Participants & Team India Flag-Off Ceremony 2022

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Mentoring Camps For ISEF Student Participants & Team India Flag-Off Ceremony 2022

Each year, IRIS organizes 3 Mentorship Camps for the winners of IRIS National Fair. These camps are focused on refining students' work through one-to-one mentoring sessions with members of the IRIS Scientific Review Committee. Mentors spend considerable time with each project, validating the quantum of work done till date and giving their suggestions for improvement. They identify the gaps and give further recommendations for improvement to help these projects meet international standards.

These sessions are extremely beneficial and enable students to understand the probable queries that might arise both technically and outside their subject; the nuances of how to present the project highlighting the research and novelty; and an overview towards gaining additional knowledge that is required while competing on the international stage.

IRIS Scientific Review Committee is a group of eminent scientists and professionals from various government and private STEM institutions, corporates and industry bodies.

S No.	Name	Affiliation	Subject Expertise
1	Dr. Arundhati Pal	Associate Professor, Serampore College, Kolkata	Plant Sciences
2	Dr. A Srinivasan	Professor, IIT, Guwahati	Physics
3	Dr. Hemant Pande	Retd Prof. Hislop College, Nagpur	Chemistry
4	Dr. Kaushik Pal	Professor, IIT, Roorkee	Energy
5	Dr. Sultan Ahmed Ismail	Retd Prof. New College, Chennai	Environmental Sciences
6	Dr. Sunil Wanchoo	Professor, Mata Vaishnodevi University, Jammu	Engineering Mechanics
7	Mr. Sachin Chaubey	Engineering Manager, Intel	Embedded Systems
8	Dr. T V Venkateswaran	Scientist 'F', Division Head: Science Communication, Vigyan Prasar, New Delhi	Mathematics and Earth Science
9	Dr. Monika Koul	Professor, Delhi University, New Delhi	Plant Sciences
10	Dr. Kishore Amin	Scientist, ACTREC, Tata Memorial Centre, Mumbai	Biomedical and Health Sciences

11	Mr. Prasanna R Banavara	Engineering Manager, Intel, Bangalore	Robotics
12	Dr. Pallavi Kshetrapal	Asst Professor, Translational Health Science and Technology Institute, Faridabad	Translational Medical Sciences
13	Dr. S Ranganathan	HOD, Department of Metallurgical Engineering, Jain University, Bangalore	Materials Science
14	Dr. A K Paul	Professor (Retd), Department of Botany, University of Calcutta, Kolkata	Microbiology
15	Dr. Jonaki Ghosh	Asst. Prof, Lady Sriram College, New Delhi	Mathematics
17	Ms. Vineetha C	Senior R&D Software Engineer, Broadcom	Systems Software
18	Dr. Priya Gupta	Asst. Professor, Amity University, Noida, UP	Behavioral And Social Sciences
19	Mr. Saral Baweja	Doctoral Researcher, University of Leipzig, Germany	Chemistry and Biochemistry
20	Dr. Suniti Yadav	Asst. Professor, Delhi University, New Delhi	Cellular And Molecular Biology
21	Dr. Pratibha Jolly	Principal (Retd), Miranda House, New Delhi	Physics
22	Dr. Ashish Ghosh	Professor, Indian Statistical Institute, Kolkata	Mathematics
23	Mr. Ajay Jayaraman	Engineering Manager, Grey Orange, Bangalore	Robotics
24	Dr. Vijay Kumar	Asst Professor, NIT Srinagar	Physics and Astronomy

1st ISEF Mentorship Camp

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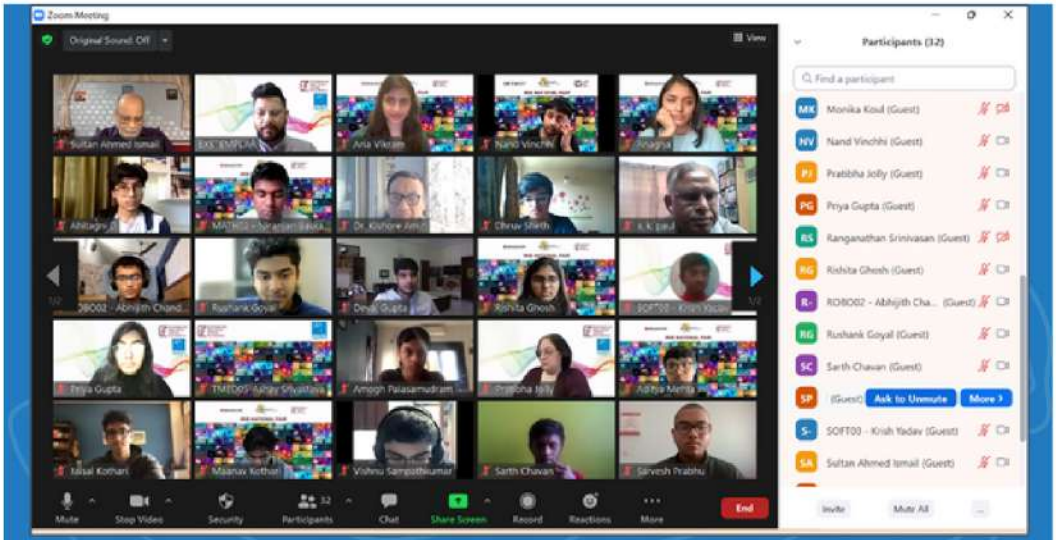
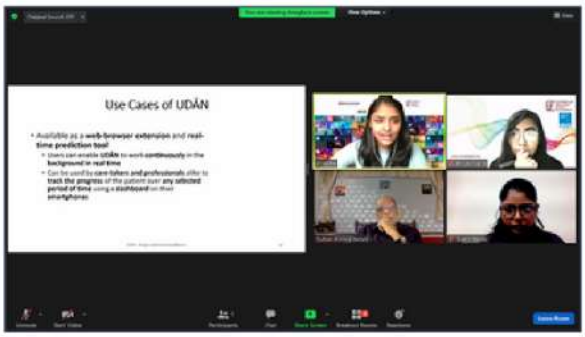
1st ISEF Mentoring Camp

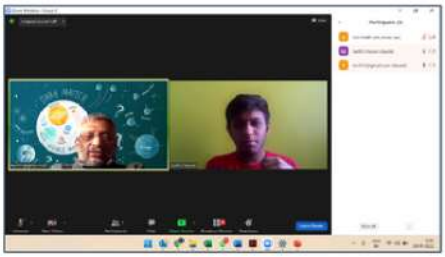
The 1st ISEF Mentoring Camp was held on 29th and 30th January 2022 virtually. 20 selected projects from IRIS National Fair 2022 participated in this 2-day camp.

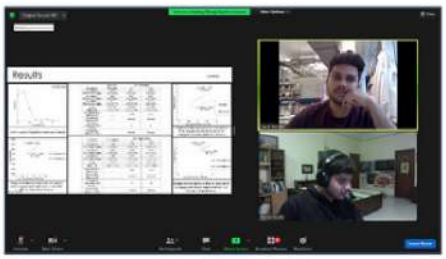


Mentors and ISEF Finalists interacting during a virtual camp

Members from IRIS Scientific Review Committee and volunteer mentors were present to coach the following students on their respective projects in order to bring improvements and dwell on the innovation being highlighted. Mentors and students were divided into different subject category groups in order to focus on key project areas.







These group wise mentoring sessions were held through Zoom video conferencing and respected zoom video joining links with agenda were shared with SRCs/mentors & participants.

Day 1: 29th January, 2022

Day 1 of the virtual camp began with a round of introduction of the mentors and welcome of participants to the camp by the Fair Director – Ms Sharon E Kumar. This was followed by a discussion on the day's proceedings and an orientation about the program by distinguished IRIS SRC members.
Each project was allocated a group of mentors whom they would be interacting with during the course of the camp. All finalists got the opportunity to present their projects to their respective mentors through video presentation and interacted with their designated mentors during their 45 minutes allocated presentation schedule. Mentors garnered required points from the presentation and questioned participants on various aspects in order to help in project improvement.

Day 2: 30th January, 2022

Day 2 of the virtual camp began with a virtual welcome assembly of all the participants. Participants then were taken through the Day's agenda and instructions for the second day of camp. They were then directed to their respective mentor groups for project mentoring. Each team was asked to present their project in 10 minutes in order to receive feedback from the larger group. The mentors listed their valuable insights and suggestions regards points of improvement, innovation required and addressed their queries.

2nd ISEF Mentorship Camp

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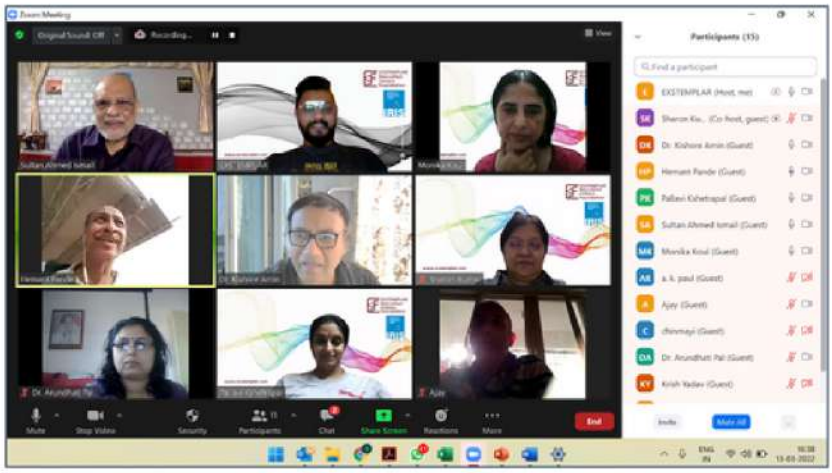
2nd ISEF Mentoring Camp

The 2nd ISEF Mentoring Camp was held on 12th and 13th March 2022. 20 selected projects from IRIS National Fair 2022 participated in this 2-day camp.
Members from IRIS Scientific Review Committee were present to check on how much work had been done since the last Mentorship camp and to provide their valuable inputs to further improve these projects, in preparation for their participation in Regeneron ISEF 2022.
Mentors were divided into different groups in order to focus on key project areas.

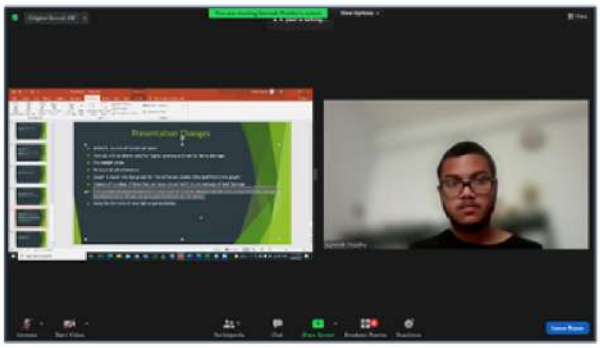


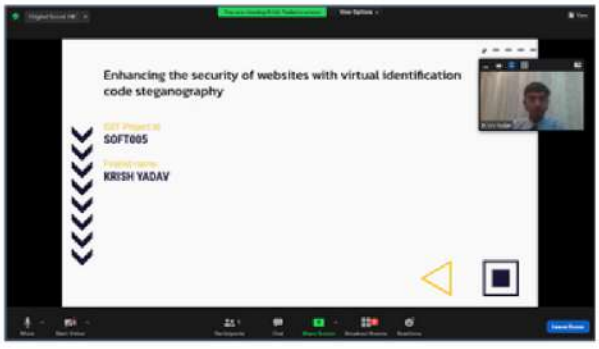
Day 1: 12th March 2022

Day 1 of the virtual camp began with a orientation to the next 2 days sessions agenda by the Fair Director – Ms Sharon E Kumar
Each project was allocated a group with respective group wise mentors. Each participant got the opportunity to present their project to their respective mentors through video presentation and were guided and questioned on their research work during the 45 minutes allocated as per schedule. Mentors evaluated projects on the improvement made in their projects between 1st and 2nd camp and provided further inputs on the same.

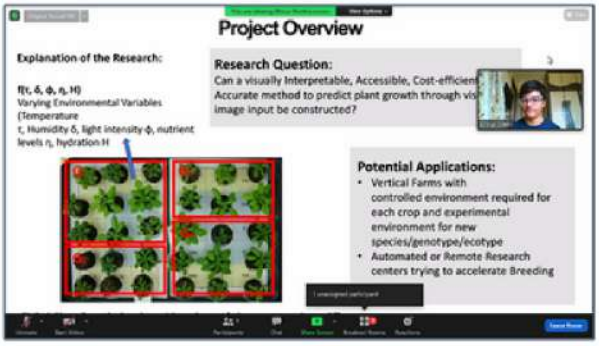
Day 2: 13th March 2022

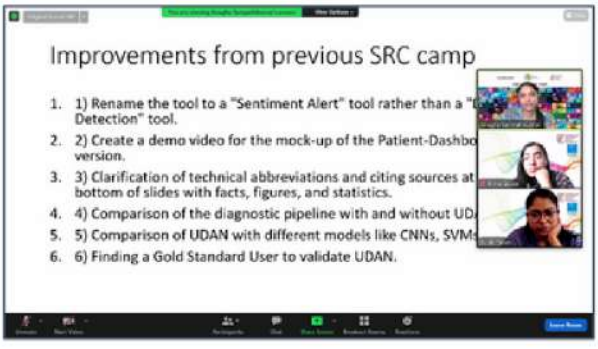
On Day 2 of the virtual camp Participants then were taken through the Day's agenda and given instructions for the camp day. Participants then presented their project in 5-6 minutes to all the mentors with a 5-slide presentation and gathered feedback/comments from all the mentors to further work on their projects.

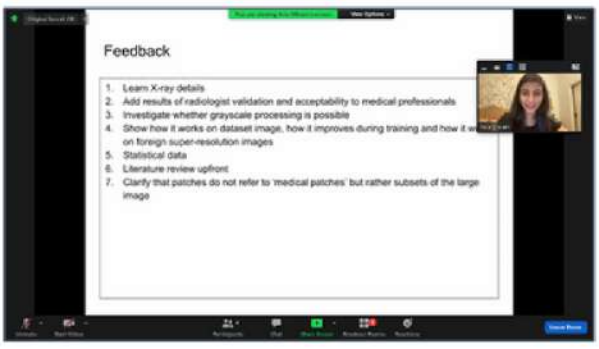



Enhancing the security of websites with virtual identification code steganography
SOFT005
KRISH YADAV


ISEF Mentorship Camp - 1
Session 1
1. Repeat the experiments 3-4 times to make sure the results are consistent and statistical
supportive.
2. Produce the material in larger quantities to make sure of practical applicability.
3. Find more applications preferably in the industrial and environmental sector.
4. Test the Taro leaf and membrane in a shaken-up oil-water mixture with varying concent
constituents.
5. Test the membrane using different types of oils- both organic and inorganic.
6. Measure the saturation point of the membrane.
7. Demonstration of recyclability of the membrane.
8. Elaborate on the difficulties faced.
9. Find more about emulsions, colloids and suspensions.
10 Be well versed in scientific terms.
Session 2
1. Measure pore size - homogeneous/ heterogeneous
2. Literature review
3. Make objectives clearer.
4. Comparison of alternative materials for use as fillers/matrix (excel)
5. Find more about the materials usually used for making membranes
6. Learn about the surface and structural chemistry of the ABS/ZnO membrane


Project Overview
Explanation of the Research:
Research Question:
Can a visually Interpretable, Accessible, Cost-efficient
Accurate method to predict plant growth through vis
image input be constructed?
Varying Environmental Variables
(Temperature
τ, Humidity δ, light intensity ϕ, nutrient
levels η, hydration H
Potential Applications:
• Vertical Farms with controlled environment required for each crop and experimental environment for new species/genotype/ecotype
• Automated or Remote Research centers trying to accelerate Breeding


Improvements from previous SRC camp
1. 1) Rename the tool to a "Sentiment Alert" tool rather than a "
Detection" tool.
2. 2) Create a demo video for the mock-up of the Patient-Dashbo
version.
3. 3) Clarification of technical abbreviations and citing sources at
bottom of slides with facts, figures, and statistics.
4. 4) Comparison of the diagnostic pipeline with and without UD
5. 5) Comparison of UDAN with different models like CNNs, SVM
6. 6) Finding a Gold Standard User to validate UDAN.


Feedback
1. Learn X-ray details
2. Add results of radiologist validation and acceptability to medical professionals
3. Investigate whether grayscale processing is possible
4. Show how it works on dataset image, how it improves during training and how it w
on foreign super-resolution images
5. Statistical data
6. Literature review upfront
7. Clarify that patches do not refer to 'medical patches' but rather subsets of the large
image

3rd ISEF Mentorship Camp

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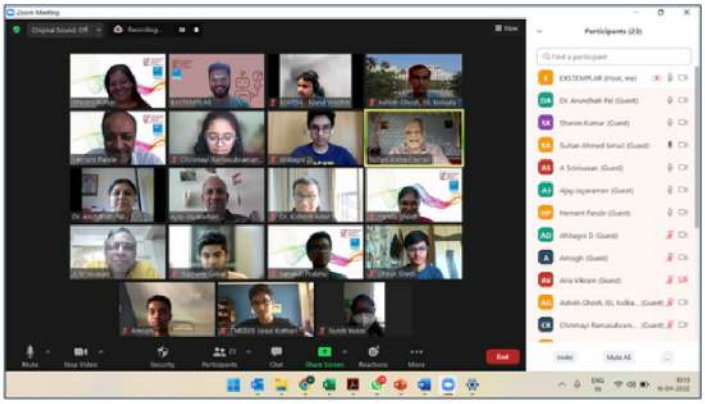
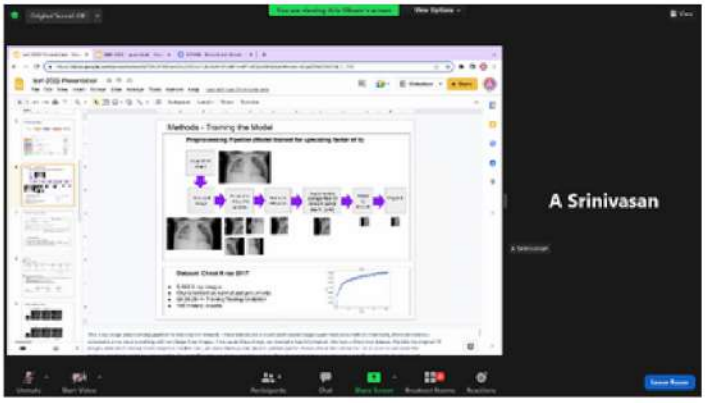
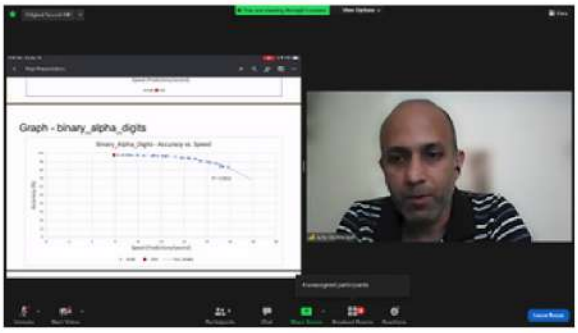
3rd ISEF Mentoring Camp

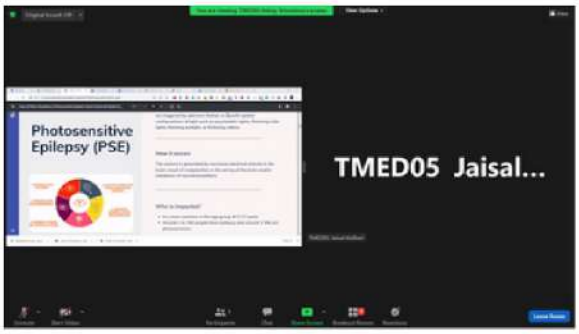
The 3rd ISEF Mentoring Camp was held on 16th and 17th April 2022. 20 selected projects from IRIS National Fair 2022 participated in this 2-day camp. The 3rd camp was conducted to enhance the presentation skills of students and to make them aware of the rules & regulations do's and don'ts at ISEF. This camp also aimed at boosting the students' confidence level, and giving them a talk on overall personality development.

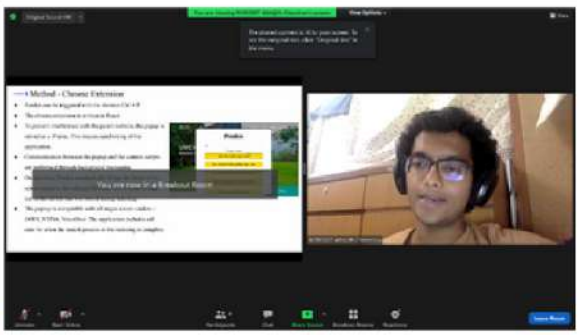


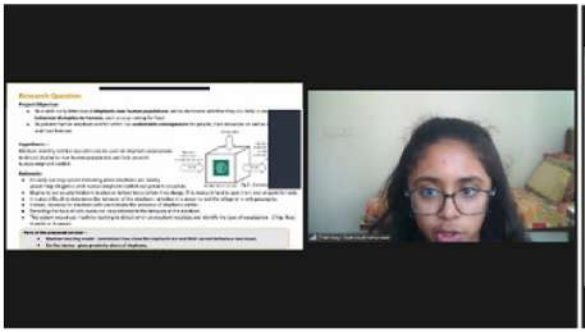



A Srinivasan


Graph - binary_alpha_digits


Photosensitive Epilepsy (PSE)
TMED05 Jaisal...





Team India to Regeneron ISEF 2022 Quad Charts

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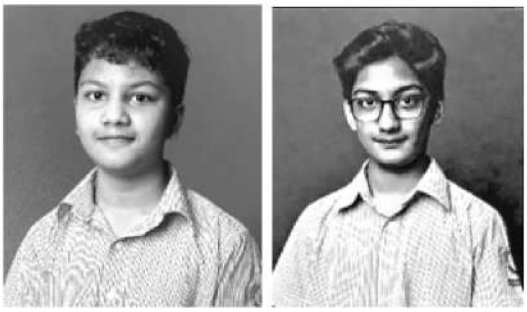
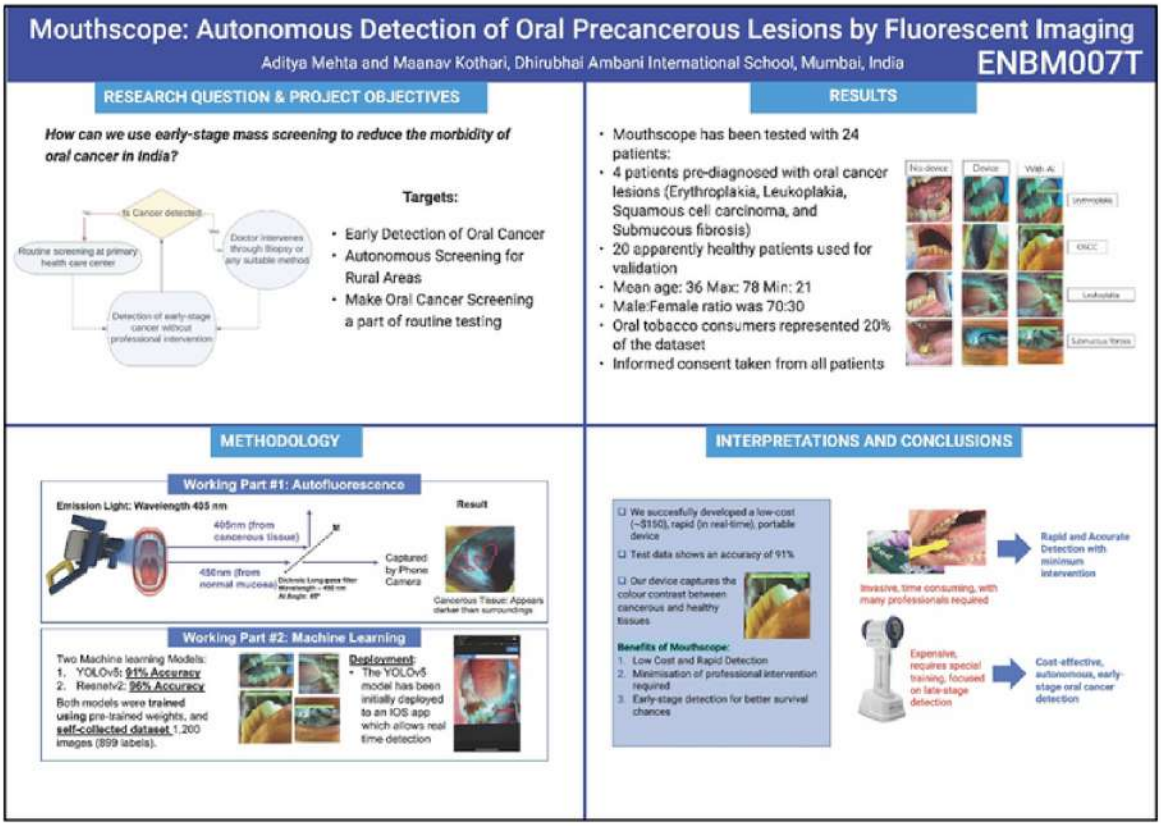
Team India to Regeneron ISEF 2022 Quad Charts

As per ISEF 2022 participation guidelines, participating teams need to prepare their ISEF 2022 Virtual Stalls which includes a Quad chart, short video of the project and a powerpoint presentation. Team Exstemplar supported students in meeting all the ISEF requirements as per guidelines provided.

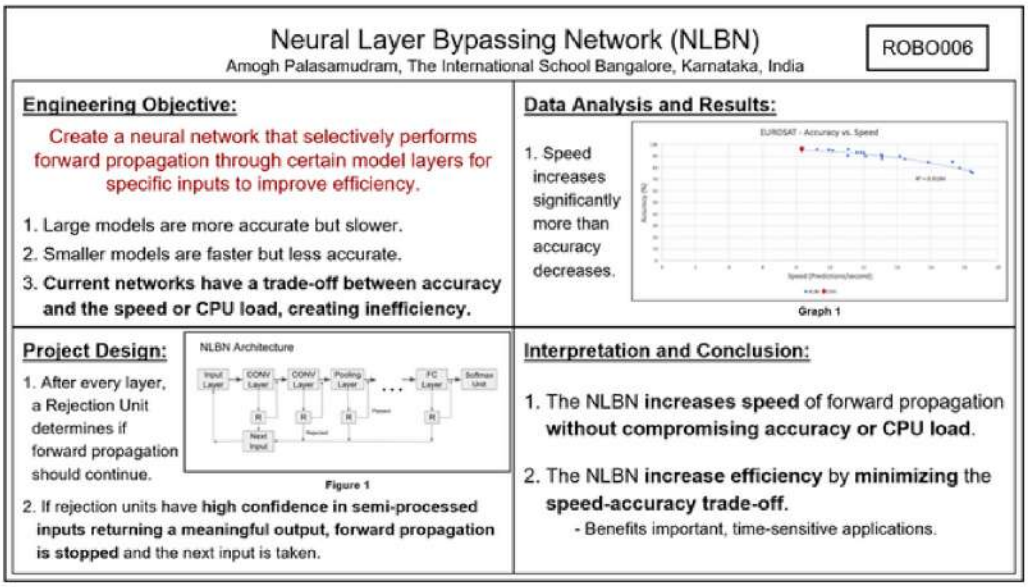
Quad Charts –

Aditya Mehta & Maanav Kothari
School - Dhirubhai Ambani International School, Mumbai
Category – Biomedical Engineering
Title - Mouthscope: Autonomous Detection of Oral Precancerous Lesions Using Fluorescent-Imaging and Computer-Vision

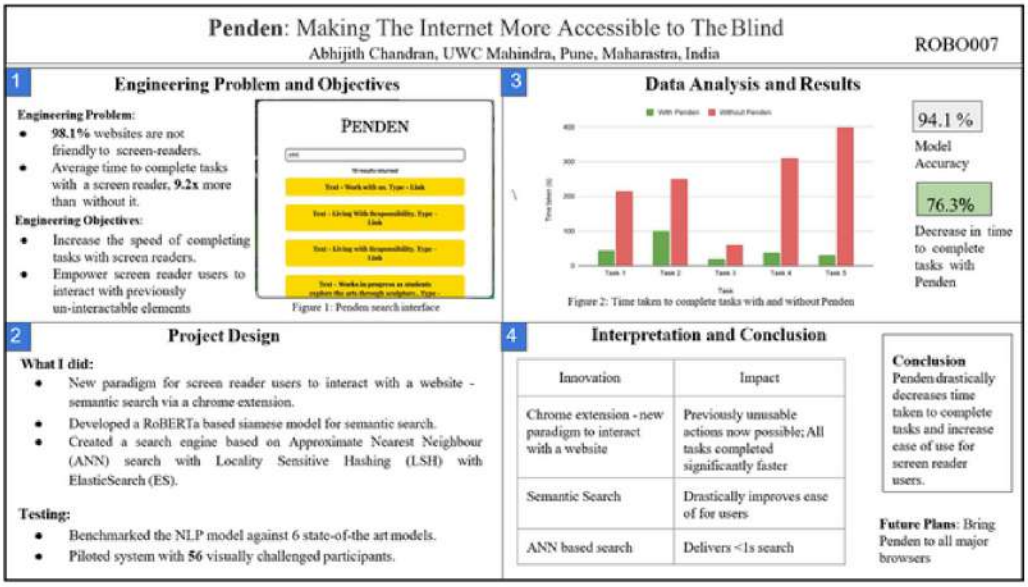




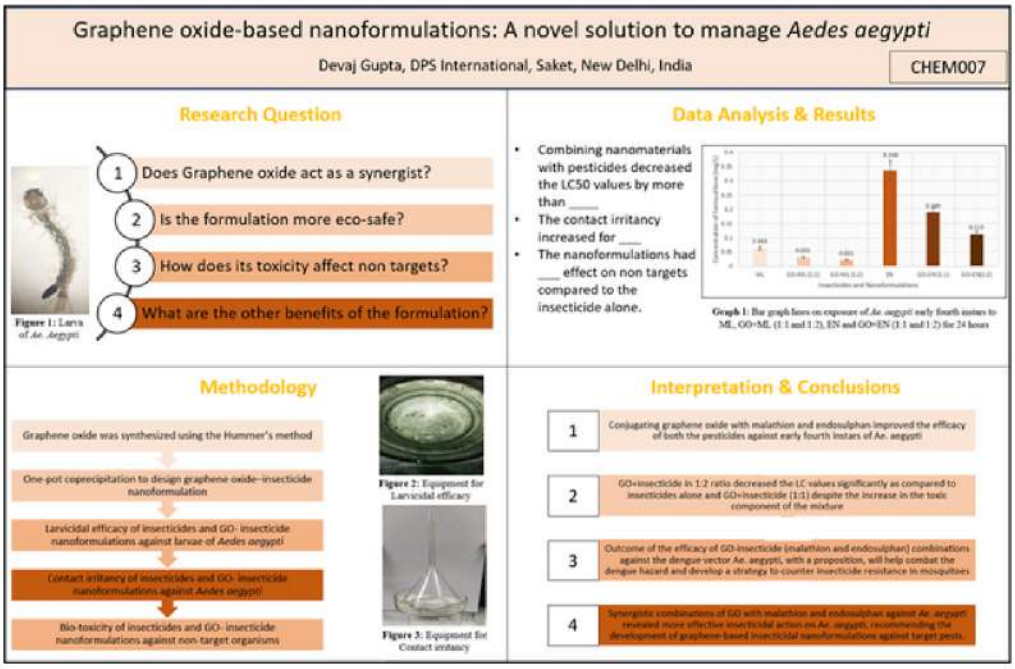
Amogh Palasamudram
School- The International School of Bangalore (TISB), Bangalore, Karnataka
Category – Biomedical Engineering
Title - Neural Layer Bypassing Network



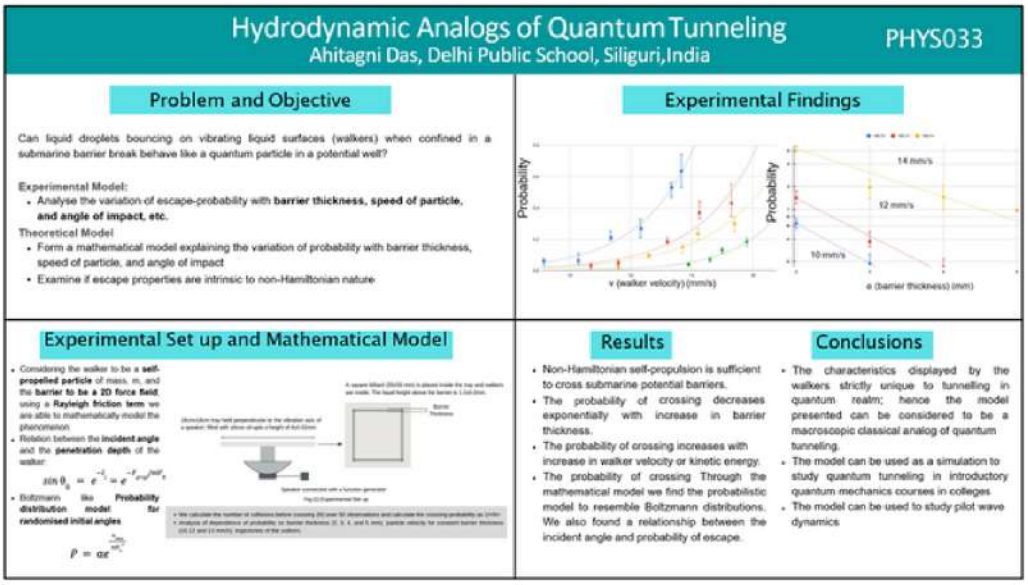
Abhijith Chandran
School- UWC Mahindra, Pune, Maharashtra
Category - Robotics and Intelligent Machines
Title - Penden: Making the Internet More Accessible to the Blind



Devaj Gupta
School- DPS International, Saket, New Delhi
Category - Chemistry
Title - Graphene oxide-based nanoformulations: A novel solution to manage Aedes aegypti



Ahitagni Das
School- Delhi Public School, Siliguri, West Bengal
Category – Physics
Title - Hydrodynamic Analogs of Quantum Tunneling

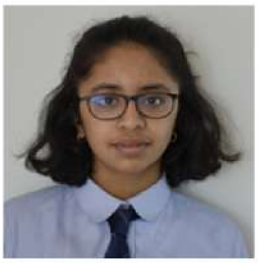


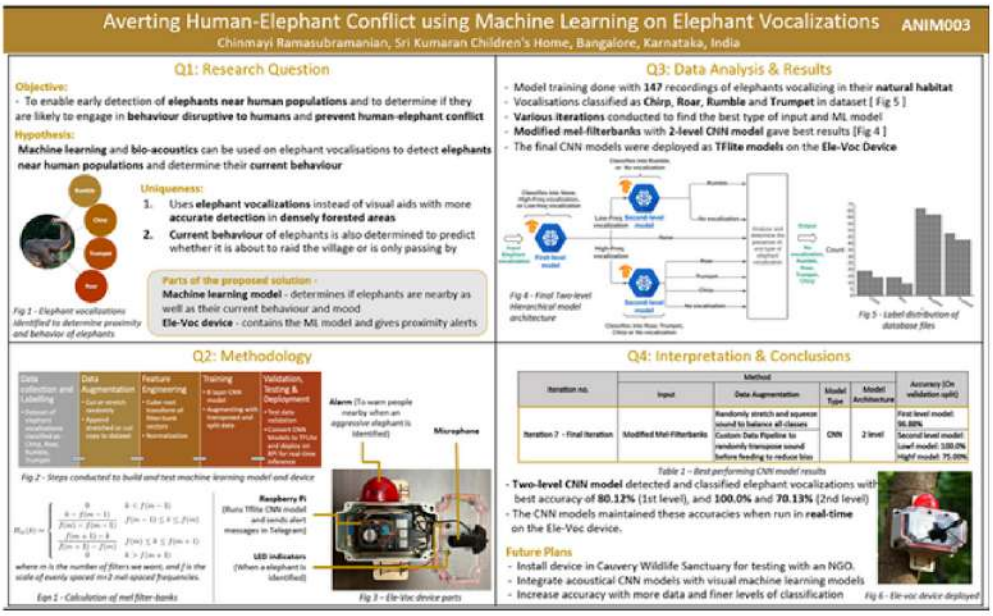
Chinmayi Ramasubramanian

School- Sri Kumaran Children's Home - CBSE, Bangalore, Karnataka

Category – Animal Sciences

Title - Averting Human-Elephant conflict using machine learning on Elephant Vocalizations



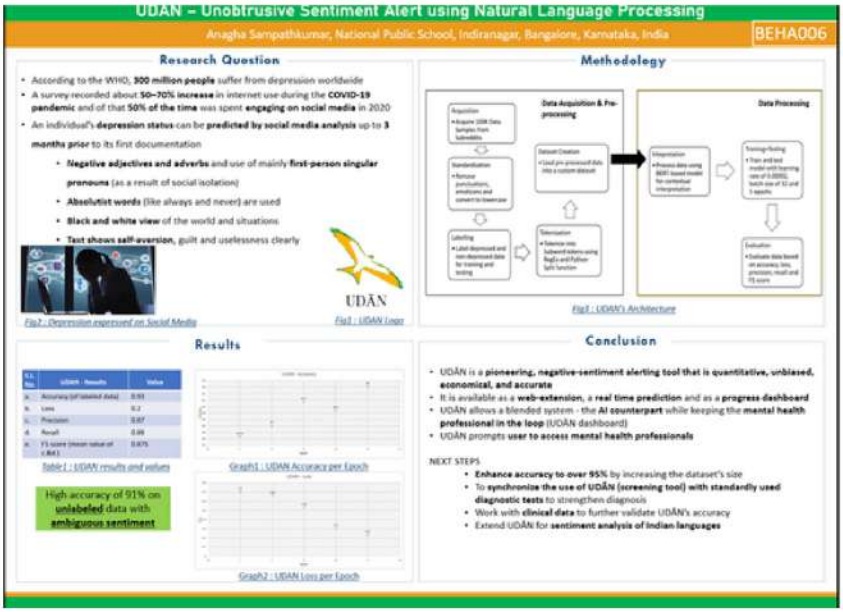


Anagha Sampathkumar

School- National Public School, Indiranagar, Bangalore, Karnataka

Category – Behavioral Sciences

Title - UDAN: Unobtrusive Sentiment Alert Using Natural Language Processing

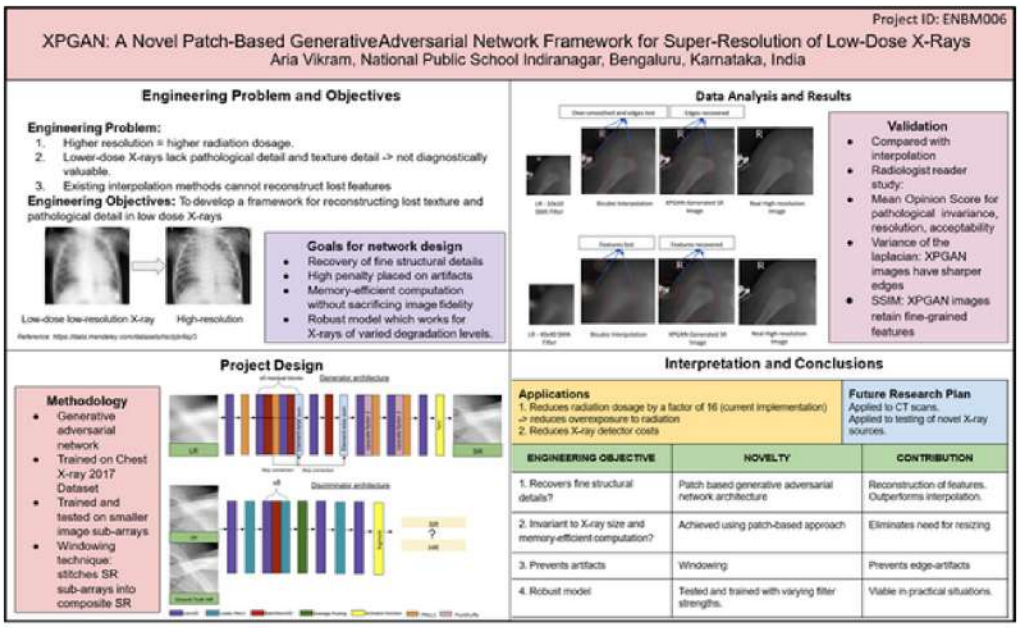


Aria Vikram

School- National Public School, Indiranagar, Bangalore, Karnataka

Category – Biomedical Engineering

Title - XPGAN: A Novel Patch-Based Generative Adversarial Network for Super-Resolution of X-Rays



Jaisal Kothari

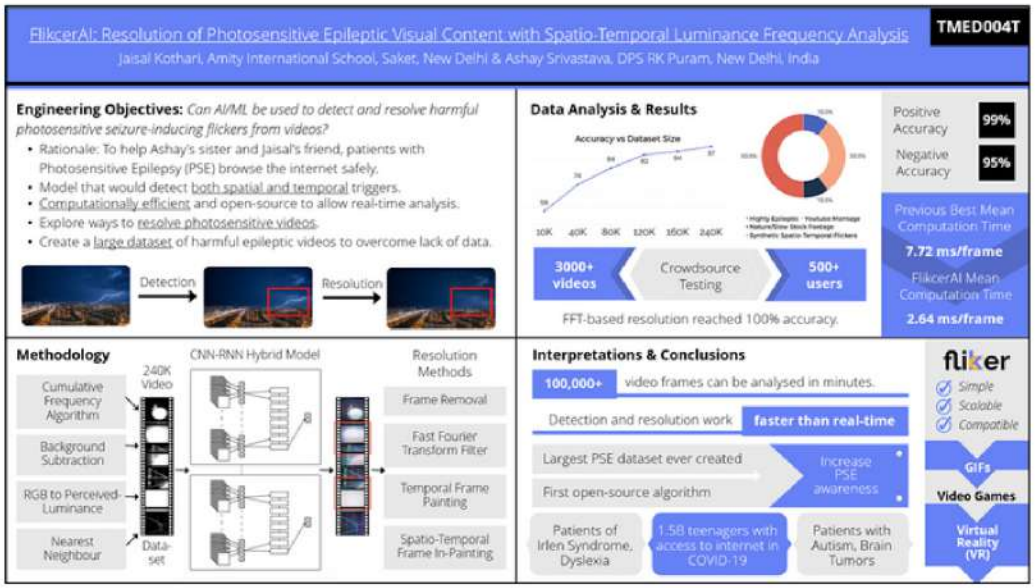
Amity International School - Saket, New Delhi

Ashay Srivastava

Delhi Public School, R. K. Puram, New Delhi

Category - Translational Medical Sciences

Title - FlikcerAI: Resolution of Photosensitive Epileptic Visual Content with Spatio-Temporal Luminance Frequency Analysis

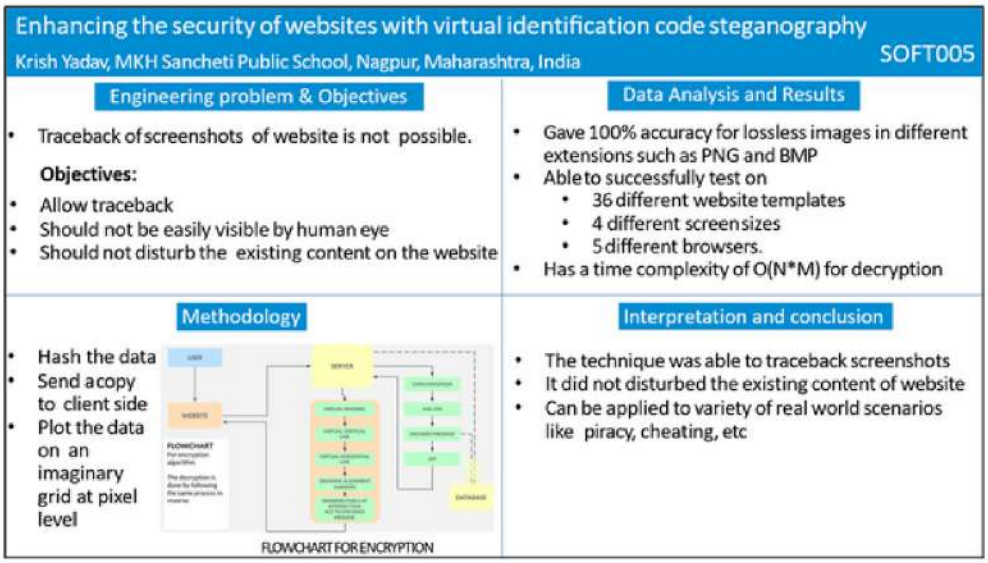


Krish Yadav

School- MKH Sancheti Public School, Nagpur, Maharashtra

Category - Systems Software

Title- Enhancing the Security of Websites with Virtual Identification Code Steganography

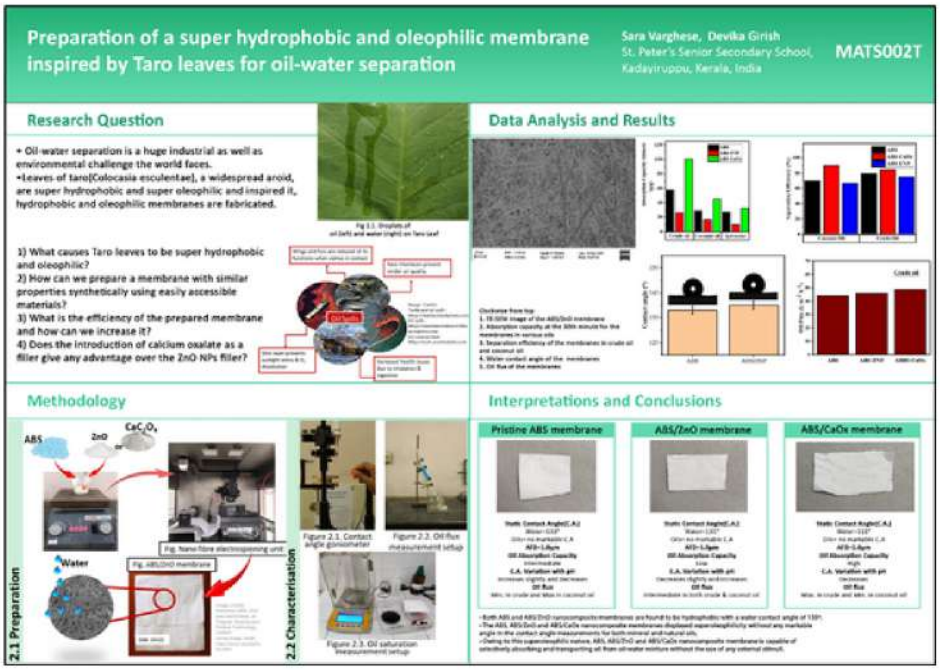


Sara Varghese & Devika Girish

School - St. Peter's Senior Secondary School, Kolenchery, Kerala

Category – Material Sciences

Title - Preparation of a Superhydrophobic and Oleophilic Membrane Inspired by Taro Leaves for Oil-Water Separation

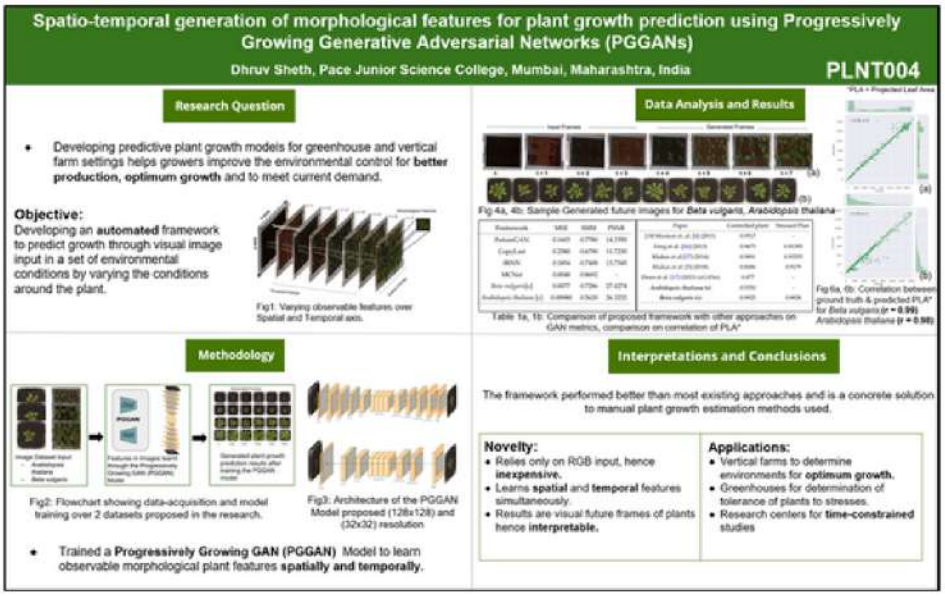


Dhruv Sheth

School - Pace Junior Science College, Mumbai

Category – Plant Sciences

Title - Spatio-Temporal Generation of morphological features for plant growth prediction using progressively growing GANs

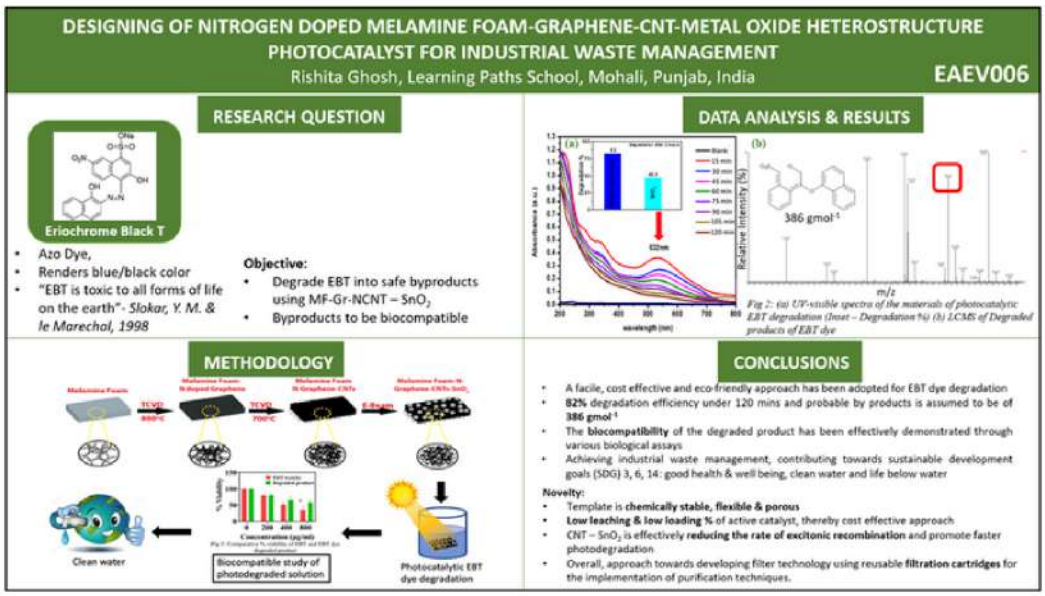


Rishita Ghosh

School - Learning Paths School, Mohali, Punjab

Category - Earth and Environmental Sciences

Title - Designing of nitrogen doped melamine foam-graphene-cnt-metal oxide heterostructure photocatalyst for industrial waste management

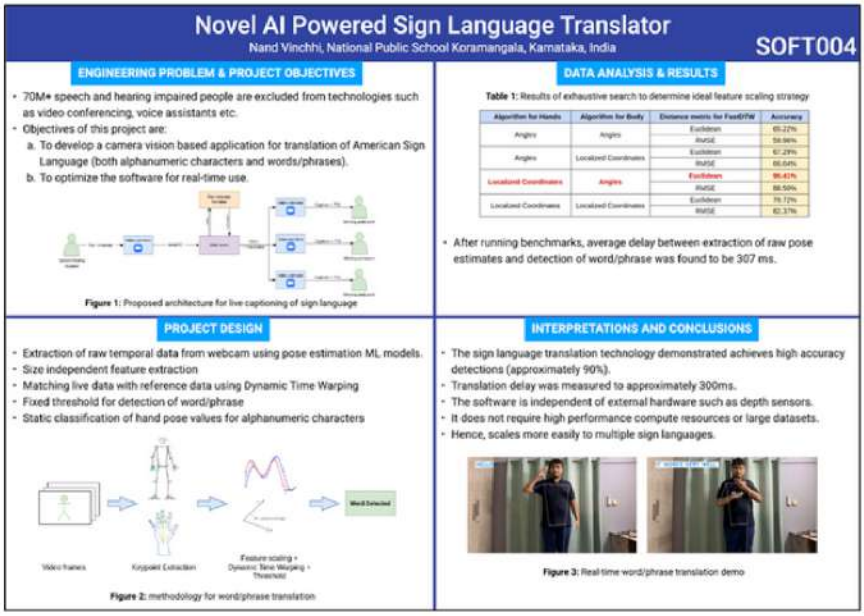


Nand Vinchhi

School - National Public School, Koramangala, Bengaluru Karnataka

Category - Systems Software

Title - Novel Ai Powered Sign Language Translator

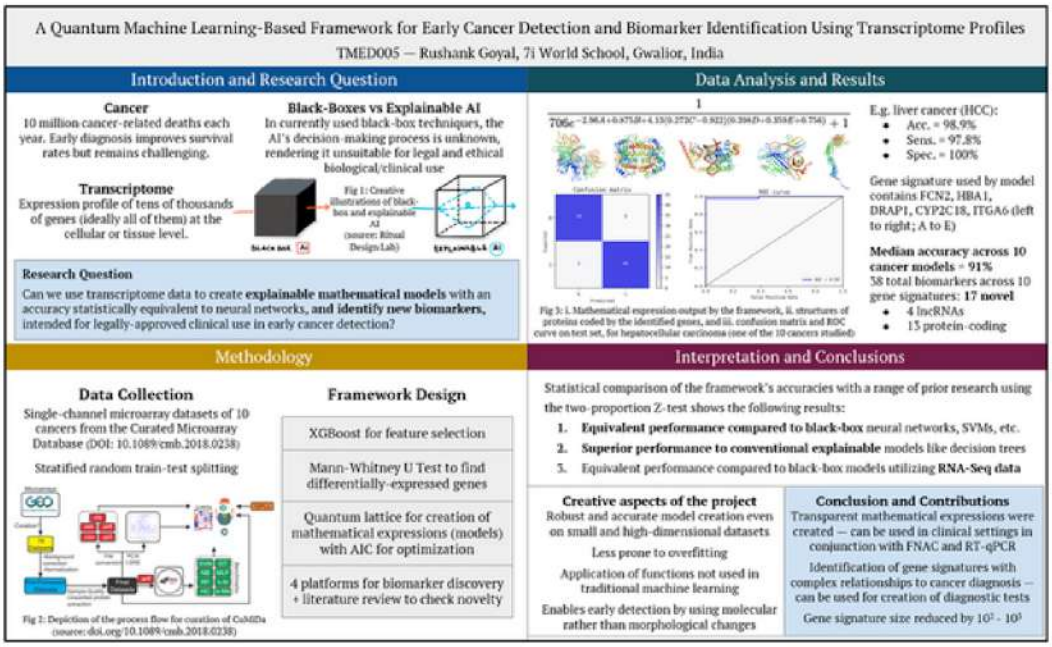


Rushank Goyal

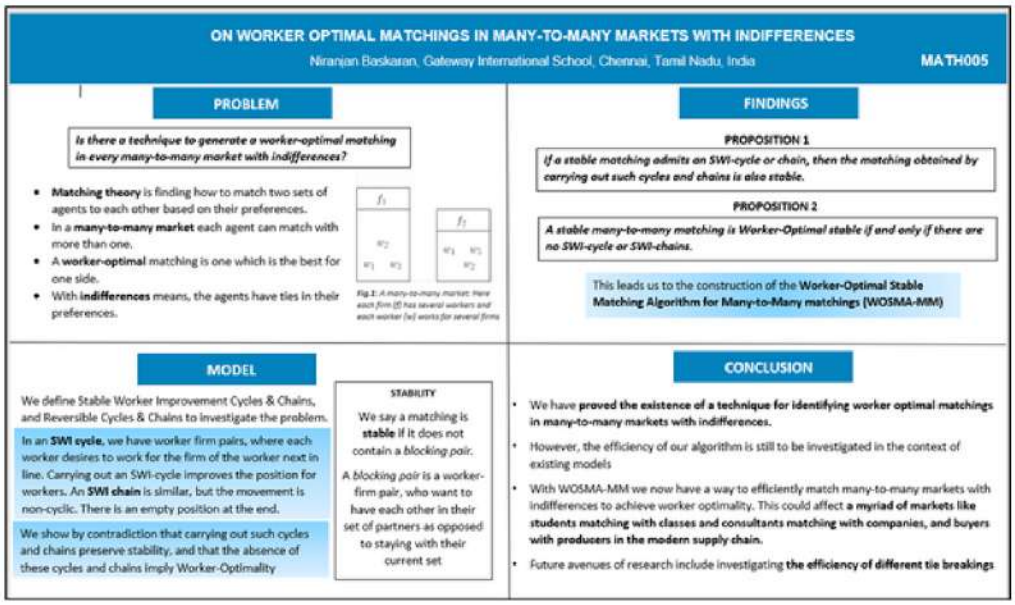
School - 7i World School, Gwalior

Category - Translational Medical Sciences

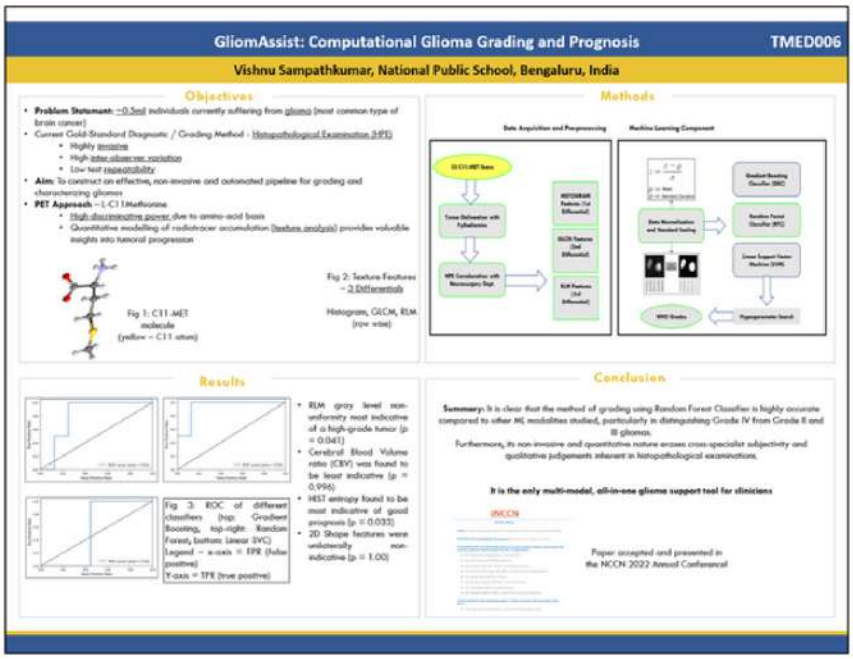
Title - A Quantum Machine Learning-Based Framework for Early Cancer Detection and Biomarker Identification Using Transcriptome Profiles



Niranjan Baskaran
School - Gateway International School, Chennai, Tamil Nadu
Category - Mathematics
Title - On worker optimal matchings in many-to-many markets with indifferences



Vishnu Ram Sampathkumar
School - National Public School, Bangalore
Category - Translational Medical Science
Title - GliomAssist: Computational Glioma Grading and Prognosis with PET

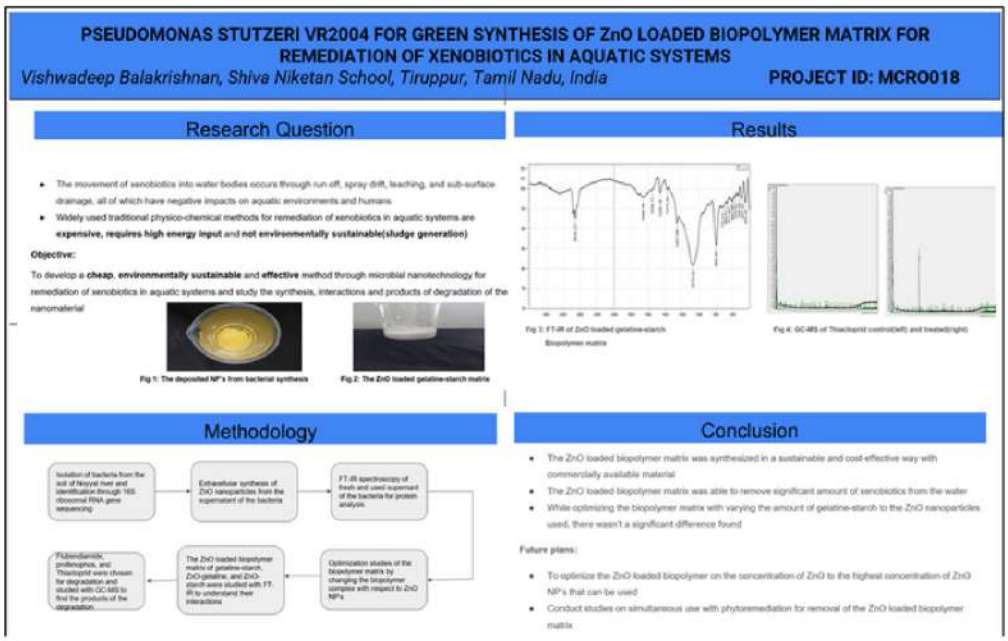


Vishwadeep Balakrishnan

School - Shiva Niketan School, Mangalam, Tamil Nadu, India

Category - Microbiology

Title - Pseudomonas stutzeri VR2004 for Green Synthesis of ZnO Loaded onto a Starch-Gelatine Biopolymer Matrix for Remediation of Xenobiotics in Aquatic Systems

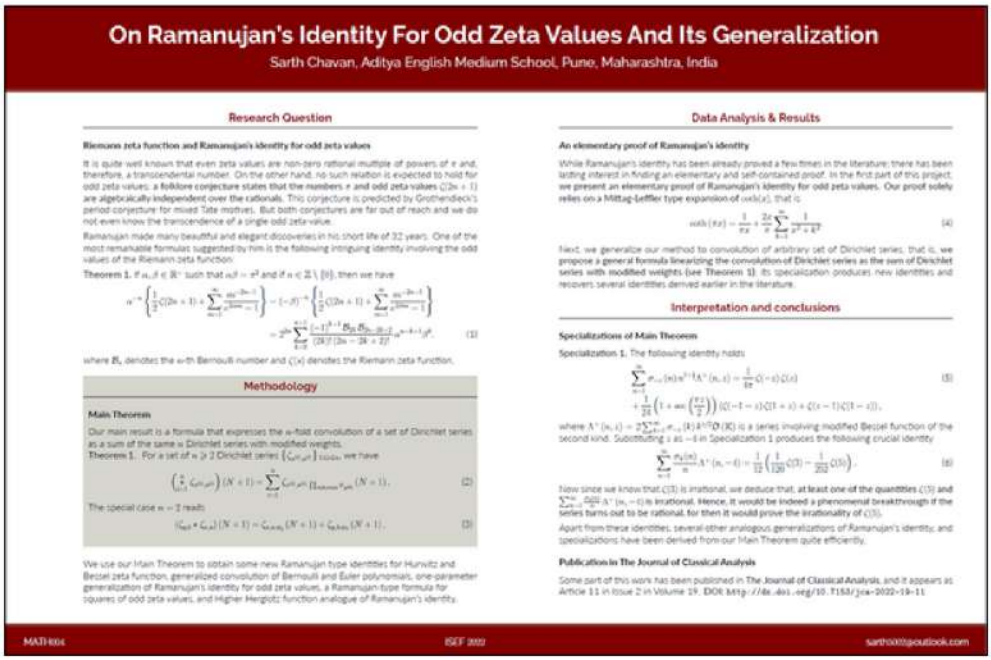


Sarth Prashant Chavan

School - Aditya English Medium School Pune, Maharashtra

Category- Mathematics

Title - On Ramanujan's identity for odd zeta values and its generalization

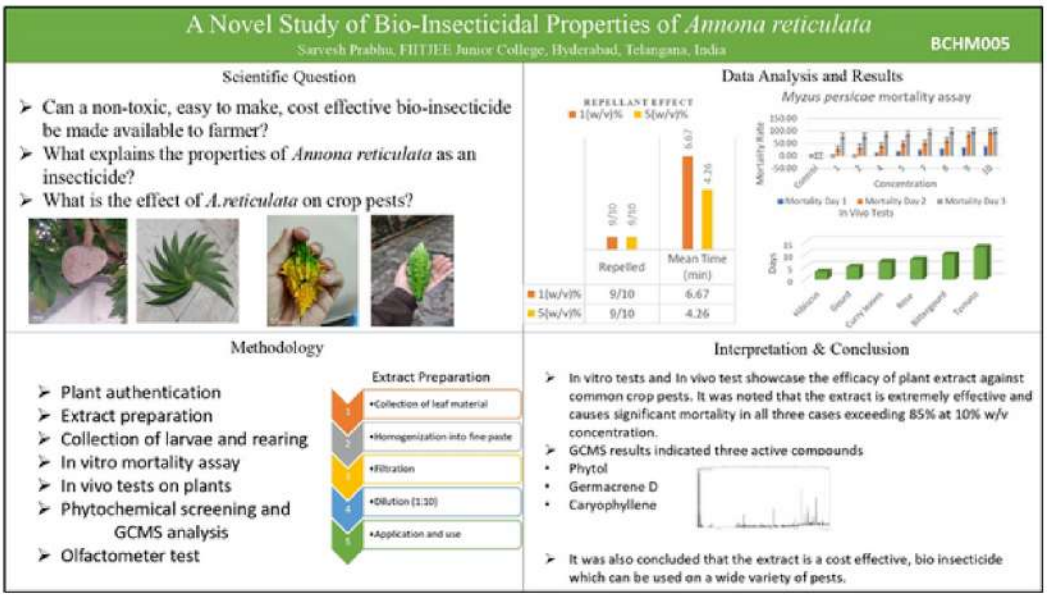


Sarvesh Prabhu

School - FIITJEE Junior College, Hyderabad, Telangana

Category - Biochemistry

Title - A Novel Study of the Bio-insecticidal Properties of Annona reticulata L.



Team India To ISEF 2022 Blazer and Lapel Pin

Anushka Vivek Tonapi
Broadcom MASTERS International Winner from India

Anushka Vivek Tonapi
Broadcom MASTERS International winner from India 2022

School - Sri Kumaran Children home, Bengaluru, Karnataka
Category - Mathematics
Title - Effect of change in the angle on Heighway Dragon Fractal

Abstract –

I will be inspecting the Heighway Dragon Fractal, which was discovered by John Heighway, a NASA physicist and was trying to explore space-filling curves, hoping to find an efficient method to coat materials on spacecraft and discovered the Heighway Dragon through paper folding.
This project aims to explore how changing the angle between the generator (a straight line that is the 0th stage of the fractal) and the first iteration in the Heighway Dragon Curve affects its appearance. By the 'angle' I am referring to the angle produced when the generator is superimposed upon the first iteration of the fractal.
I used the LaTeX program to generate the images and the Lindenmayer System to alter the starting axiom and the rules associated to obtain a fractal image.
I first change the angle and observe the change in the appearance of the Heighway Dragon. Then I looked at angles that are odd multiples of which produce reflections of the original Heighway Dragon.
I also observed that there is a cyclic pattern among these angles, where the original Heighway Dragon is obtained every four angles into the sequence of odd multiples of 45° and angles that correspond to each other in this sequence produce identical images. I also found that supplementary angels produce fractal images which contain reflections of corresponding iterations in the fractal image produced by the other angle. Details of various angels used and their corresponding results will be discussed.

Team India to ISEF 2022 Flag Off Ceremony

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May 05, 2022

Team India to ISEF 2022 Flag Off Ceremony

Aryabhatta Hall, Department of Science and Technology
Technology Bhawan, New Delhi

Team India to ISEF 2022 with DST Secretary - Dr. S Chandrasekhar (center), Head NCSTC - Dr. Praveen Arora (extreme left), COO-Exstemplar Foundation – Ms. Sharon E Kumar (extreme right)

Team India ready to present their projects to
Dr. S Chandrasekhar
Secretary, Department of Science
Government of India

Welcome address
Dr Parveen Arora
Head- National Council for Science & Technology Communication (NCSTC)
Department of Science and Technology, Government of India

Ms Paula Golden
President, Broadcom Foundation addressing Team India to ISEF 2022

Sharon E Kumar
Fair Director-
Initiative for Research and Innovation in STEM
Chief Operations Officer-
EXSTEMPLAR Education Linkers Foundation orienting about the program

Virtual and physically present Team India participants interacting with
Dr. S Chandrasekhar,
Secretary, Department of Science and Technology, Government of India

Keynote Address by
Dr. Srivari Chandrasekhar
Secretary, Department of Science and Technology, Government of India

Initiative for Research & Innovation in STEM

IRIS

Participation in ISEF 2022

Participation in ISEF 2022

Team India At Regeneron International Science And Engineering Fair 2022 Atlanta, Georgia, USA

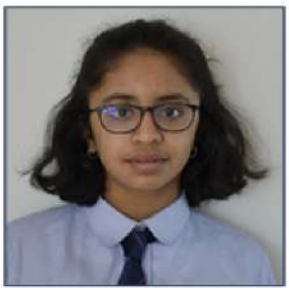
The Regeneron International Science and Engineering Fair or ISEF is the world's largest pre-collegiate STEM competition. Students from over 75 countries participate at what has come to be known as the Olympics of Science Fairs. The winners of the Initiative for Research and Innovation in STEM (IRIS) National Fair represent our country as Team INDIA and have been shining brightly at ISEF since the year 1999.

The IRIS National fair, a program of EXSTEMPLAR Education Linkers Foundation, is funded by the Department of Science and Technology, Government of India (DST) and Broadcom. It is an annual event where students of grades 5-12 compete to form Team India to represent the country at the Regeneron International Science and Engineering Fair held each year in the United States of America.

314 Indian students have participated in ISEF since 1999 courtesy their Winning at IRIS National Fair, and have won over 202 awards and accolades at ISEF. This year the 20 projects that made up team India brought home a collective of 22 awards making the Tri-colour soar higher than ever.

Special Awards won at Regeneron ISEF 2022

Chinmayi Ramasubramanian



Category- Animal Sciences

Title - Averting Human-Elephant conflict using machine learning on Elephant Vocalizations

Award -

1. Acoustical Society of America - 2nd Award of $1000
2. US AID - 2nd Award of $3000
3. University of Arizona - Scholarship

Rishita Ghosh

Category - Earth and Environmental Sciences

Title - Designing of nitrogen doped melamine foam-graphene-cnt-metal oxide heterostructure photocatalyst for industrial waste management

Award - Arizona State University – Scholarship

Sarth Prashant Chavan

Category- Mathematics

Title - On Ramanujan's identity for odd zeta values and its generalization

Award - American Mathematical Society - 1st Award of $2000

Niranjan Baskaran

Category - Mathematics

Title - On worker optimal matchings in many-to-many markets with indifferences

Award - Mu Alpha Theta - Mathematics Honor Society - 1st Award of $1500

Special Awards won at Regeneron ISEF 2022

Rushank Goyal
Category- Translational Medical Sciences
Title - A Quantum Machine Learning-Based Framework for Early Cancer Detection and Biomarker Identification Using Transcriptome Profiles
Award -
American Statistical Association - 3rd Award of $500

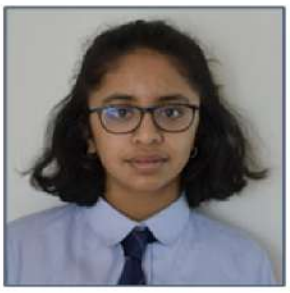
Jaisal Kothari & Ashay Srivastava
Category - Translational Medical Sciences
Title - FlikcerAI: Resolution of Photosensitive Epileptic Visual Content with Spatio-Temporal Luminance Frequency Analysis
Award - Shanghai Youth Science Education Society

Devaj Gupta
Category- Chemistry
Title - Graphene oxide-based nanoformulations: A novel solution to manage Aedes aegypti
Award - American Mathematical Society - 1st Award of $2000

Grand Awards won at Regeneron ISEF 2022

Rishita Ghosh
Category - Earth and Environmental Sciences
Title - Designing of nitrogen doped melamine foam-graphene-cnt-metal oxide heterostructure photocatalyst for industrial waste management
Award – 2nd Grand Award of $2000

Chinmayi Ramasubramanian
Category- Animal Sciences
Title - Averting Human-Elephant conflict using machine learning on Elephant Vocalizations
Award - 2nd Grand Award of $2000



Jaisal Kothari & Ashay Srivastava
Category - Translational Medical Sciences
Title - FlikcerAI: Resolution of Photosensitive Epileptic Visual Content with Spatio-Temporal Luminance Frequency Analysis
Award - 2nd Grand Award of $2000

Aditya Mehta & Maanav Kothari
Category – Biomedical Engineering
Title - Mouthscope: Autonomous Detection of Oral Precancerous Lesions Using Fluorescent-Imaging and Computer-Vision
Award - 2nd Grand Award of $2000

Grand Awards won at Regeneron ISEF 2022

Sara Varghese & Devika Girish
Category – Material Sciences
Title - Preparation of a Superhydrophobic and Oleophilic Membrane Inspired by Taro Leaves for Oil-Water Separation
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Devaj Gupta
Category - Chemistry
Title - Graphene oxide-based nanoformulations: A novel solution to manage Aedes aegypti
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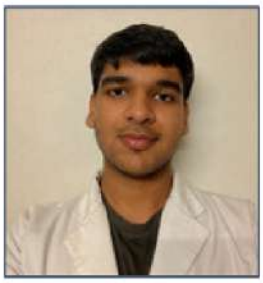

Sarvesh Prabhu
Category - Biochemistry
Title - A Novel Study of the Bio-insecticidal Properties of Annona reticulata L.
Award - 3rd Grand Award of $1000

Dhruv Sheth
Category – Plant Sciences
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Category - Robotics and Intelligent Machines
Title - Penden: Making the Internet More Accessible to the Blind
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Category - Translational Medical Science
Title - Assist: Computational Glioma Grading and Prognosis With PET
Award – 3rd Grand Award of $1000

Anagha Sampathkumar
Category- Behavioral Sciences
Title - UDAN: Unobtrusive Sentiment Alert Using Natural Language Processing
Award - 4th Grand Award of $500

Sarth Prashant Chavan
Category - Mathematics
Title - An Elementary proof of Ramanujan's identity for odd zeta values and its generalization
Award - 4th Grand Award of $500

Rushank Goyal
Category – Translational Medical Sciences
Title - A Quantum Machine Learning-Based Framework for Early Cancer Detection and Biomarker Identification Using Transcriptome Profiles
Award - Award - 4th Grand Award of $500

Glimpses Of Team India At ISEF 2022


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ISEF
A PROGRAM OF
SOCIETY FOR SCIENCE


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Initiative for Research & Innovation in STEM

IRIS

IRIS in the NEWS

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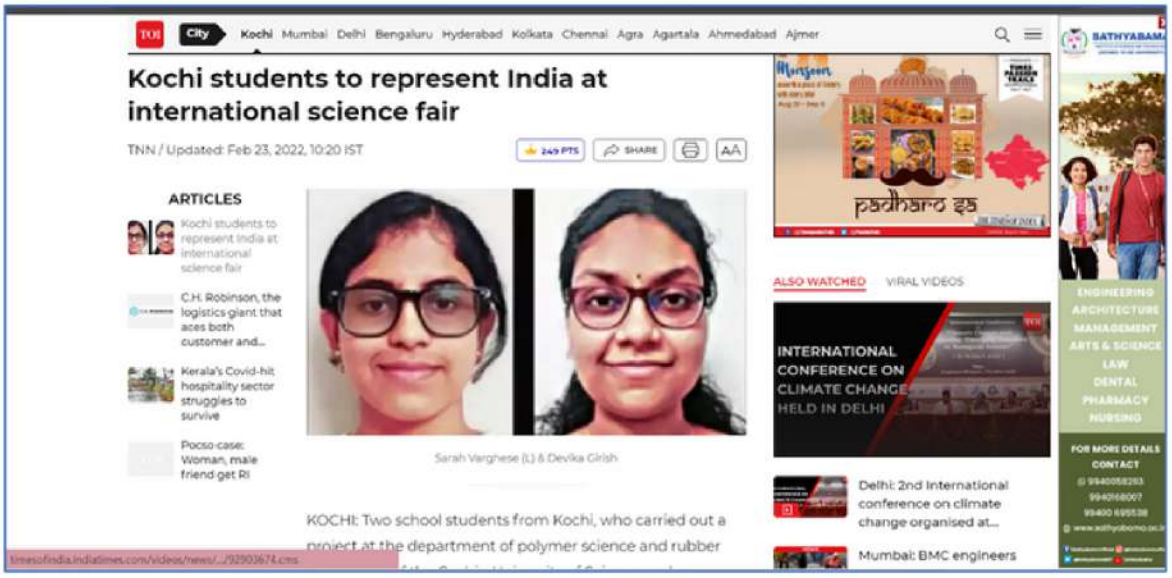
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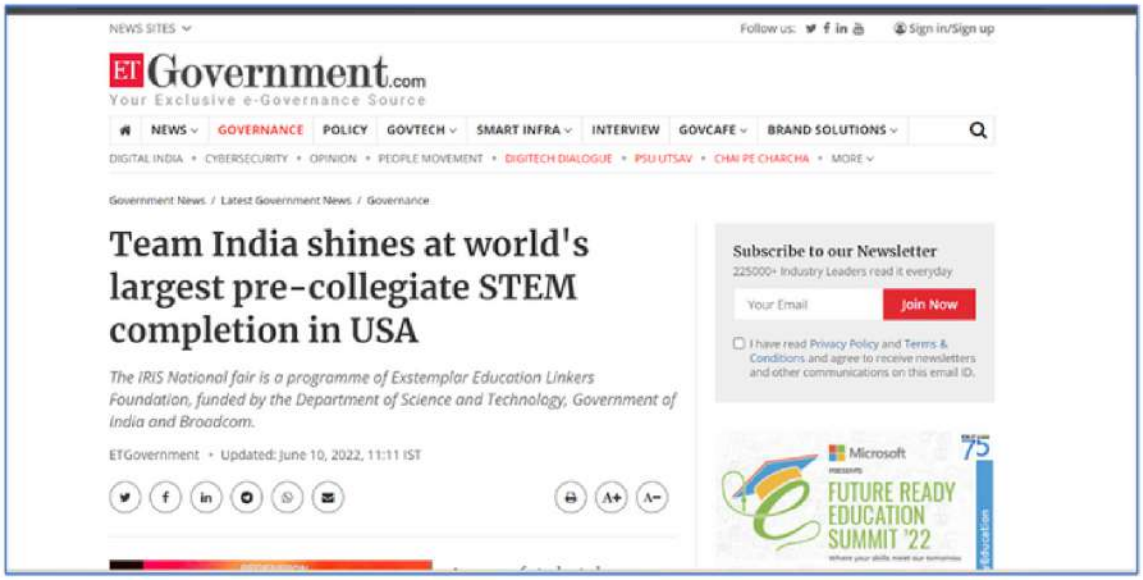
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Team India shines at world's largest pre-collegiate STEM completion in USA
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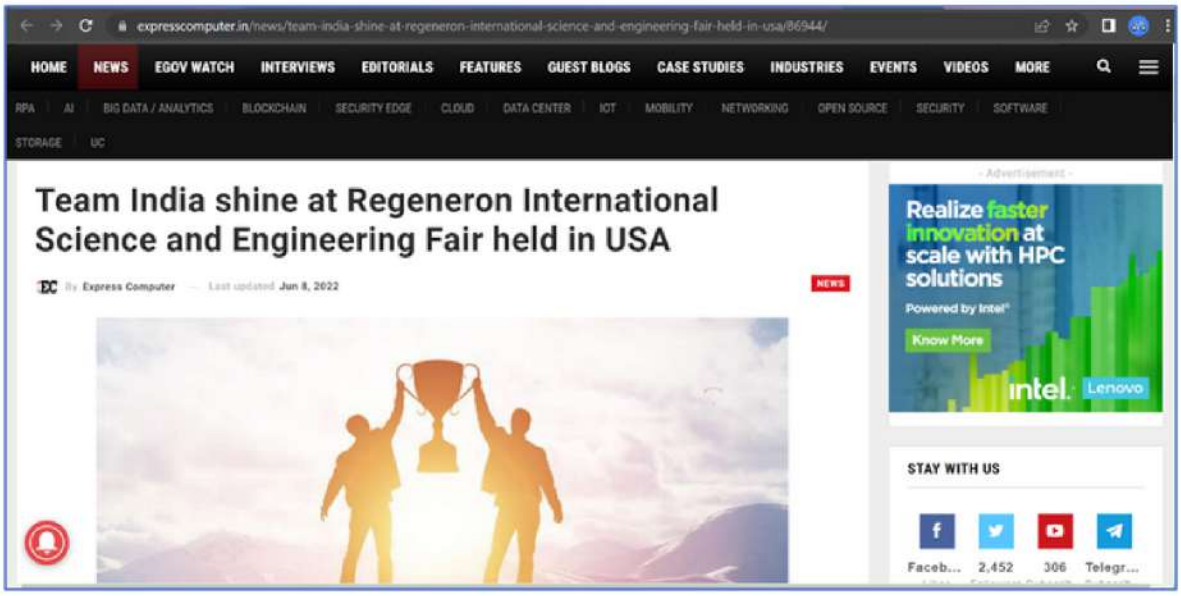
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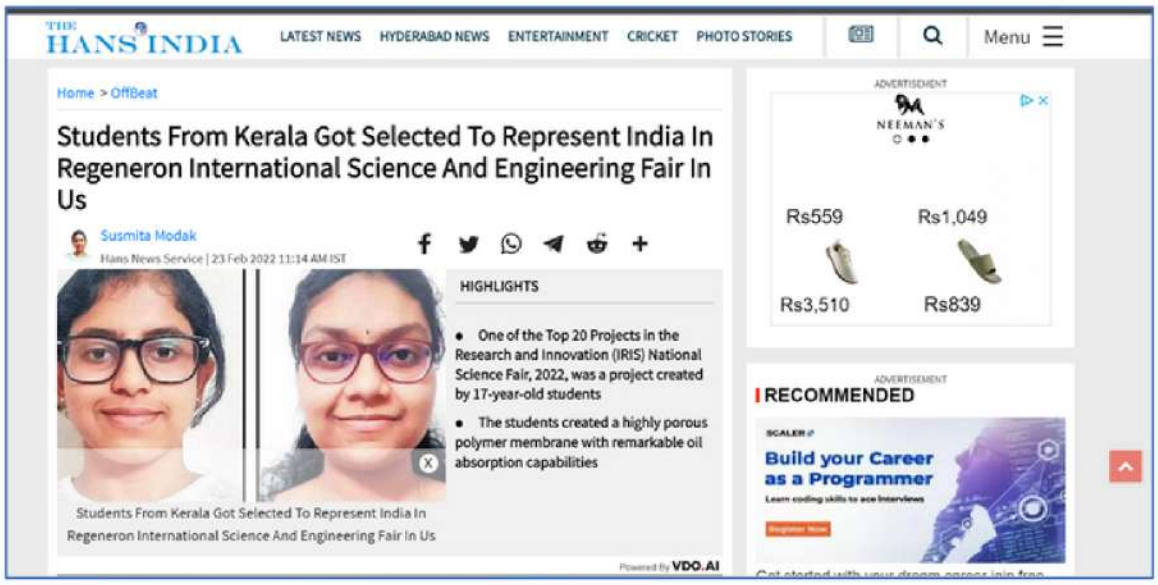
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Susmita Modak
Hans News Service | 23 Feb 2022 11:14 AM IST
HIGHLIGHTS
• One of the Top 20 Projects in the Research and Innovation (IRIS) National Science Fair, 2022, was a project created by 17-year-old students
• The students created a highly porous polymer membrane with remarkable oil absorption capabilities
Students From Kerala Got Selected To Represent India In Regeneron International Science And Engineering Fair In Us
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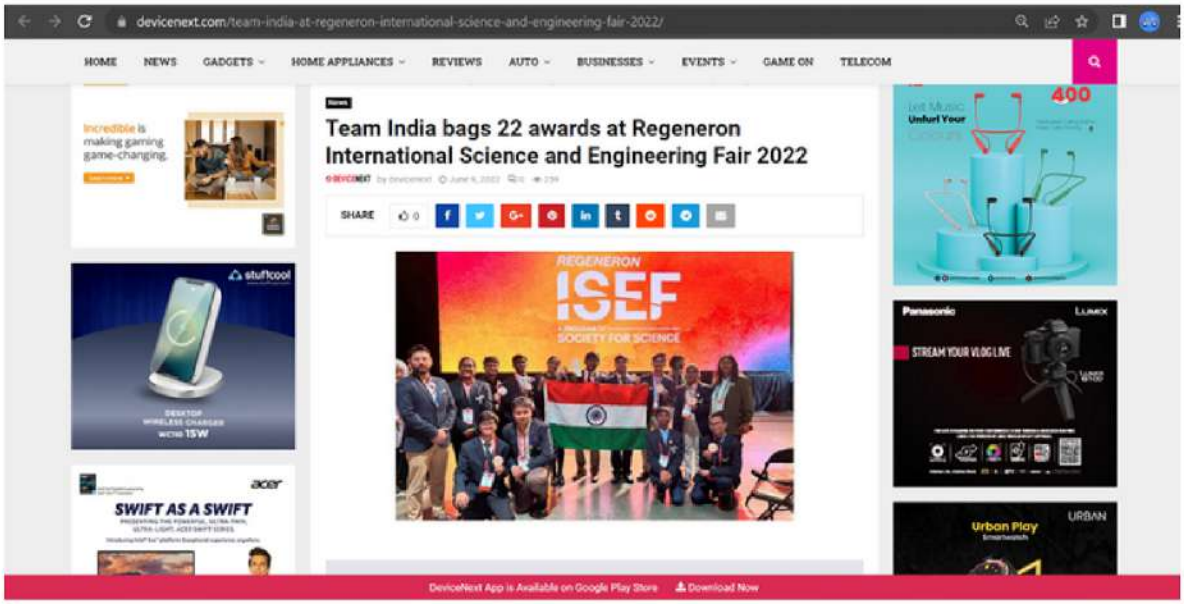
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Team India bags 22 awards at Regeneron International Science and Engineering Fair 2022
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Student duo wins grand award at Iris National Fair 2021-22
FPJ Web Desk | Updated: Tuesday, March 08, 2022, 06:20 PM IST
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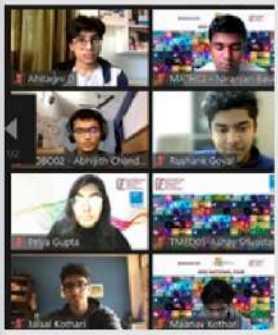





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