





	Name of the innovation project title	Name of the institute/School	Short Summary	Details of the team	
<b>Category 1: Sustainability</b>					
1	<b>Solar Panel Cleaner</b>	K J Somaiya private industrial training institute	Solar panels significantly impact our world, but their efficiency is hampered by the need for regular cleaning, typically every three days, due to dust accumulation. To address this, we aim to create an automated system that ensures peak performance by periodically cleaning the solar panels. Our innovative approach involves designing smart solar panels capable of automatic and remote self-cleaning, reducing the need for manpower and conserving water, thereby optimizing the efficiency of solar farms.	Electronics Mechanic (2nd Year) (i) Kartik Devendra (ii) Samarth kale (iii) Malhar Doke (iv) Ahmad Shaikh  <b>Mentor - Shekhar C.Bhande</b>	
2	<b>Natural pesticide</b>	Somaiya Vidya mandir,Sakarwadi	we present a natural pesticide from custard apple seeds which was extracted from boiling custard apple seeds in a round-bottom flask, then use it as a pesticide on plants to eliminate pests. This natural pesticide is environmentally friendly, causing no harm to the environment, and prevents soil and water pollution. It is cost-effective, as it is obtained naturally and has a low production cost. Additionally, custard apple seeds are readily available.	Shaikh Alfaiz Javed Class -9th Div-B  <b>Mentor - Shaikh I.R.</b>	
3	<b>Self- sustaining indoor compost system</b>	The Somaiya School	Creating a self-sustaining indoor compost system addresses the need for efficient organic waste disposal in modern living spaces. This innovative system reduces plastic waste in landfills, promotes resource conservation through composting, and empowers individuals to contribute to a more sustainable lifestyle at the household level, fostering broader societal shifts toward sustainability	(i) Shaurya Shah 9A (ii) Manav Maniyar 9B (iii) Giridhar Jagdish 9B (iv) Manan Shah 9A  <b>Mentor - Ms. Genevieve Aloysius</b>	<b>Shri K J Somaiya Award for Navriti-School level</b> 
4	<b>Sustainable city and EV</b>	The Somaiya School	Presenting an idea of a hassle-free charging with the Sustainable Power Charger, which can be installed beneath the vehicle, saving space and minimizing charging time. This innovative solution liberates the charging experience, eliminating the need for a dedicated charging station and providing on-the-go charging while the vehicle is in motion.	(i) Josvin Naizu- XI / Science (Sr. Secondary) (ii) Sai Srikan J -XI / Science (Sr. Secondary)  <b>Mentor- Ajit Kumar</b>	
5	<b>A self-cooling vaccine transportation and storage device without the requirement of ice packs or external electric supply for operation.</b>	K J Somaiya English Medium School Sameerwadi	This project focuses on creating a scientifically sound method for transporting vaccines to remote areas, addressing healthcare disparities, particularly for children in developing countries with limited access to preventive therapies. The lack of sufficient cold storage in these regions contributes to inadequate vaccination coverage and vaccine wastage. The proposed solution is a thermoelectric vaccine cooler that operates within the temperature range of 4 to 8 degrees Celsius, preventing loss of potency and reducing vaccine wastage. The cooler is charged overnight at regional health centers, maintaining the required temperature during transportation. The real-life applications include miniaturized refrigeration systems with efficient cooling for various purposes.	(i) Anup S Badagi Class - IX (ii) Shreyas C Sonnad Class - IX  <b>Mentor - Mahesh Patil</b>	

6	<b>Sustainable Lounge</b>	Somaiya School of Design	Presenting a sustainably inspired ergonomic lounge designed using recycled cardboard & paper rods. The leftover materials were repurposed to create a shoe support and a side table, making sure there were no scraps remaining. Making the overall design eco friendly and sustainable. As glues are known to be a large factor of sustainability that Himanshi has worked on. The next stage of this journey is to explore more environmentally friendly glues as well. The lounge design has been shortlisted for Earth4R's Nikola Tesla Contest	Hinanshi Jain Mentor - Dr Poornima Nair	
<b>Category 2- Assitive Technology</b>					
7	<b>Exterio thermoregulator</b>	K J Somaiya college of education	This product is a gear designed to prevent heat strokes by regulating body temperature externally. It uses propanol and silicon ice for thermoregulation. With a significant increase in heat-related deaths reported in 2023, the gear aims to reduce mortality rates by preventing heat-related fatalities. It is environmentally friendly, utilizing waste silicon ice bars and cubes. The unique feature is its ability to regulate temperature without affecting the body's chemistry, making it suitable for regular use during summer outings. In the face of rising global temperatures, the gear helps counter the threat of heatwaves. It provides cooling for 4-5 hours and can be reused by placing it in a cool area.	Mahalaxmi Pillai Mentor - Dr Pooja Birwatkar	
8	<b>Spot welding machine for lithium ion battery</b>	K J Somaiya Pvt.ITI	Creating lithium-ion batteries using spot welding allows for the production of batteries with various ratings. Lithium-ion batteries have gained popularity due to their environmental friendliness, durability, and superior efficiency compared to lead-acid batteries. The spot welding machine used in this process was crafted using a microwave transformer, with turns designed accordingly for optimal performance.	Electronic Mechanic Sr (i) Suyash Dalvi (ii) Nishant Thale (iii) Nikhil Gupta  Mentor- Tilottam sansare	
9	<b>Design and Optimization of a Microbial Fuel Cell</b>	S K Somaiya College, SVU	We present biobatteries or Microbial Fuel Cells as an alternative to lead batteries, utilizing electrogenic bacteria to convert complex carbon substrates into electrical energy. This eco-friendly solution has no adverse impact on the environment and aims to minimize health hazards such as cancer associated with lead battery usage. The electrical energy is generated through the metabolism of electrogenic bacteria. The prototype received recognition and won prizes in oral presentations at International and National Conferences on Biotechnology, as well as in a National Level Poster Competition at SRINJA. Additionally, the project secured a grant of Rupees 6.5 Lakhs from BASF Sponsored Pune Knowledge Cluster, Government Of India.	Neha Kuity Mentor- Dr. Seema Sambrani	<b>Shri K J Somaiya Award for Navriti-Institute level</b>  
10	<b>A saline bottle with red alert alarm</b>	Somaiya Vidya Mandir, Sakarwadi	When patients experience symptoms like weakness or diseases, doctors often prescribe saline. In India, millions use saline daily. However, when the saline in the bottle runs out, a pressure difference occurs, leading to potential health risks like heart attacks or strokes. To address this, our project involves a saline bottle with a red alert alarm using a battery, LED bulbs, buzzer, and wires. The benefits include reducing patient mortality rates, preventing the reverse flow of blood, easy handling for all ages, reducing the workload for hospital nurses, and being pollution-free. It is entirely safe, beneficial for all living creatures, and requires no special training.	Audarya Sandip Sable class 8 th Div - B Mentor-Savita R Somwanshi	<b>Shri K J Somaiya Award for Navriti-Woman Innovator</b>  

11	<b>Multi-purpose Walker for disable and elders.</b>	Somaiya Vidya Mandir,Sakarwadi	Presenting a low-cost, multi-purpose walker to address the challenges faced by the disabled and elderly in India, where osteoporosis rates are high. This walker allows them to move easily, walk safely, and sit down when tired. It also serves as a convenient solution for toilet use. Made from plywood and pipes, the walker is lightweight, easy to handle, and costs less. It requires no special training, and when not in use, it doubles as a chair at home. The walker is pollution-free and provides a practical and affordable solution for those with mobility challenges.	Sakshi Ashok More Class-6 Div-B <b>Mentor- Somwanshi Savita R</b>	
12	<b>Enhancing navigation for Visually Impaired Individuals with LiDAR-Based Cap</b>	K. J. Somaiya College of Engineering	Presenting a LiDAR-based blind cap to help visually impaired individuals navigate indoor and outdoor spaces. This wearable device uses advanced sensor technology, including 2D LiDAR and a depth camera, to create real-time maps of the surroundings. The cap incorporates additional LiDAR sensors and a Text-to-Speech Module for detailed obstacle information and auditory instructions. This technology significantly enhances navigation for visually impaired individuals, providing them with comprehensive assistance for confident and independent movement in their surroundings.	MTech Electronic Engineering (i) Abhiroop Padate (ii) Aaboli Shinde (iii) Chinmay Parate (iv) Arnav Padwal (v) Avishka Joglekar (vi) Iftekhar Patel <b>Mentor - Dr. Ninad Mehendale</b>	
13	<b>A Suture device</b>	K.J.Somaiya College of Engineering	Our innovative device has effectively minimized surgical complications. Its utility lies in its incorporation of sutures designed to reposition the rectum without the need for traditional stitches, providing stability. The device features a suture arm equipped to dispense a specified number of sutures, and its reusability is enhanced by the ability to stack sutures, thereby reducing costs. We have been granted National Phase Patent	B Tech Mechanical Engineering (i) Saylee Ingole (ii) Kopal Gangrade (iii) Nilesh Gandhi (iv) Sumesh Manjrekar  <b>Mentor -Dr Ramesh Lekurwale and Rajesh Pansare</b>	
14	<b>Bracepacks</b>	The Somaiya School	Wearing braces often causes severe pain as they align teeth by pulling and pushing. Commonly, people use ice packs externally, which isn't very effective. The Bracepack, made of silicone and diluted silica gel, provides a better solution. Users freeze it, then insert it into their mouth for a painless experience. It's customizable, eco-friendly, and more effective than external ice packs. Unlike generic external packs, Bracepacks are internal, flavored, and reusable.	(i) Aradhana Phadke Sardesai-8A (ii) Abhishree Tripathi-8B (iii) Netra Saini 8C  <b>Mentor- Aditi Gupta</b>	

### Category 3- IOT and AI

15	<b>CADWAS - A Dark Web Crawler</b>	K. J. Somaiya College of Engineering	CADWAS, our innovative solution, addresses critical issues in the dark web, a hidden space where illegal activities thrive anonymously. Dark web enables the sale of illicit goods and services, posing threats to national security. CADWAS combats these issues by conducting Bitcoin transaction analysis, tagging malicious individuals, correlating network traffic, employing machine learning for content analysis, and detecting vulnerabilities. Our comprehensive approach provides actionable data for law enforcement to swiftly and informedly combat illicit activities on the dark web, contributing to cybersecurity efforts.	1) Siddhika Rai - Team Leader 2) Shubham Varma 3) Amaan Shaikh 4) Aditya Tayade 5) Guneet Sura 6) Anant Shah  <b>Mentor - Prof. Ashwini Dalvi</b>	<b>Shri K J Somaiya Award for Navriti-Institute level</b>  
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16	<b>Organic Agricultural Revolution using IoT</b>	K J Somiya English Medium School Sameerwadi	This prototype combines technology and biology to combat environmental issues like desertification, climate change, and soil degradation. It utilizes panchagavya and a robot for bio-fertilizers, vertical farming, and drip irrigation with living microorganisms. The system aims to regenerate fungal hyphae, balance ecosystems, and enhance water-holding capacity, preventing soil extinction and mitigating environmental problems. Environmentally friendly and affordable, it promotes sustainable development through organic farming, reducing carbon emissions and improving soil health.	Dhiraj Uppin class - VIII and Saket allimatti IX  <b>Mentor - Mahesh R Patil</b>	
17	<b>Aavruti- Enhancing Weather Nowcasting using Deep Learning and Satellite Imagery</b>	K J Somaiya Institute of Technology	The project addresses the crucial need for accurate and timely weather forecasting in India, given its diverse climate patterns and susceptibility to extreme weather events. The use of satellite images and deep learning minimizes the need for physical data collection, contributing to reduced carbon emissions. This greener approach aligns with global efforts to mitigate climate change. The uniqueness of the solution lies in integrating Attention Transformers and GANs for highly accurate short-term predictions, specifically tailored to India's unique weather dynamics. The project also introduces a temperature prediction model with innovative algorithms like CATBoosting and StackGRU, further distinguishing its approach.	Sheetal Papat Pranjal Sancheti Meghan Mane Parth Pulkundwar  <b>Mentor- Dr Umesh Shinde</b>	