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GETA
YOUNG SCIENTIST PROGRAM

Grooming Student Innovators for the Nation

A National Science Projects Competition Online

Awardees Booklet

05.10.2024

In Chairman's words...

05 October 2024

Dear Young Scientist, greetings.

Congratulations to the Winners of GYS Avishkar Awards 2024. My compliments to all the Participants too, as participation is the first step towards winning. I also appreciate the interest taken by the Guide Teachers, in some cases Parents, in encouraging youngsters to innovate. Great efforts. Keep up the spirit.

We launched GETA Young Scientist (GYS) Program in January 2022 to groom Student Innovators for the Nation. Ever since, GYS Program has grown in many dimensions. It is heartening to note that, in these 32 months, over 60,000 students from 22 States took part in various events.

To reach this point in the GYS Program, there have been many initiatives that contributed to the progress. These include Wednesday Science Quizzes, Charaka Science Medal, GYS Talks, Swaminadhan Science Day Talent Test, Samasya Khoj Contest, Avishkar Awards, Guru Puraskar Awards, Innovation Knowledge Base, and GETA Young Scientist Channel.

It is a hopeful time ahead in India for Innovation enthusiasts. The Indian Government budgeted Rs. 50,000 Crore to Anusandhan National Research Foundation over five years (2023-28) to support Basic Research and Prototype Development. To spur private sector-driven research and innovation at a commercial scale, Union Budget 2024-25 promised establishing a financing pool of Rs. One Lakh Crore. We are very excited to be a part of this journey during these opportune times. We intend to bring in a Science & Innovation Magazine soon, particularly for High School Teachers and Students to not just catch up but to leap forward in Innovation.

Coming back to GYS Avishkar Awards 2024, over 300 projects from 20 States were submitted in six languages. Interestingly, representation from Boys and Girls was equal. While six States contributed 83% of submissions, 43% were from Andhra Pradesh alone. 221 Projects qualified for Round 1 by 34 Educators from 7 States with an average experience of 21 years, 40% of them being from the Industry. We reviewed 44 projects instead of 32 in Round 2. Finally, 13 Winners happen to be from 8 States, viz., Andhra Pradesh, Delhi, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Odisha, and Punjab. Proud of them.

We are grateful to the Chairman of RK College of Engineering Sri MM Kondaiah garu for gracing the Awards event as the Chief Guest. Thanks to the Principal and Staff for hosting the event. Another year of proud efforts from the GYS Program Team, Teachers, Parents, Students, GETA Patrons, and Evaluators. I shouldn't miss out on my appreciation to Bhanu (Quiz Master), Bala (AMEX), Saikrishna (BARC), Bharath (ICICI Foundation), Vennela (Freelance Interior Designer), Kiran, Padma and Sudha (GYSP). Encouragement from Mr. TV Subbarao (Chennai) and Mr. T Subbarao (Chirala) in support of Cash Awards motivates further.

Last word. While there are efforts, my observation is that there is a long way to go on Standard of Student Innovations. The Country needs a lot more players and effort in this Space to realize the Prime Minister's Vision of India 2047. Keep up the Innovation spirit, people. Look forward to more exciting times ahead.

Murali Valiveti, M. Tech., Chairman, GETA Service Trust.
Ph. +919885619996.

GETA YOUNG SCIENTIST PROGRAM

Grooming Student Innovators for the Nation

The Prime Minister called for a commitment for Viksit Bharat by 2047. A key success factor in achieving that vision is becoming Atmanirbhar Bharat, i.e., self-reliant India. To become self-reliant, we need indigenous products and solutions. Research and Innovation are the basis for indigenous products. Educational Institutes should sow the seeds for research. Young minds of students are the best opportunity to nurture Innovation. Some foundational work is already happening in this space. However, for a country of 140 Crore people, the quantum as well as quality of Innovation is not adequate to realize the dream of Viksit Bharat.

GETA Service Trust launched GETA Young Scientist Program (GYS Program) to contribute to Innovation growth. It is the brainchild of Murali Valiveti, an Educator and Philanthropist. The mission is to groom one in every 1000 high school students influenced by this program to become an Innovator.

GYS Program itself innovates on ways and means of achieving this mission. Works on raising Science Temper among students. Promotes awareness on Innovation concepts, approaches, training programs, competitions, and events. Builds platforms for Knowledge sharing. Conducts National Contests and Awards Events for High School Students as well as Teachers on Problem Identification, Solution Design, Articulation, and Project Presentation.

Launched in January 2022, there have been over a dozen initiatives so far, i.e., September 2024. Major GYS Program Initiatives are briefed below. More than 62,000 students took part in 420+ events from at least 22 States. It is a long journey ahead.

GYS Wednesday Online Science Quizzes

To raise the Science Temper among students, there is a persistent effort in the form of Online Science Quizzes. A Quiz is published every week on Wednesdays at 7 PM promptly. Completely Online. 25 multiple choice questions with pictures and animations on the syllabus of 6th to 10th grades to be answered in 20 minutes. A digital certificate is emailed if one scores 60% or more and physical certificates are couriered to toppers each week. Cash vouchers are gifted to the best performers every month. Launched on 26 January 2022, over 41,000 quizzes were taken from all over the Country in 140 weeks as of September 2024 and more than 12,600 digital certificates were issued to Students.

GYS CHARAKA SCIENCE MEDAL 2024

A National Online Quiz Contest

Every 40 to 50 weeks, there is a Mega Science Quiz to win the GYS Charaka Science Medal. Conducted in two phases where the preliminary round is an online multiple choice quiz of up to 100 questions followed by a Live Quiz of the Finalists. It is a great fun to watch the fumes, anxiety, and close contests among the students. Winners are felicitated with Trophies, Certificates, and Cash Awards.

GYS talks

Many students are intelligent, but with poor articulation. To succeed in life, presentation is an important skill. GYS Talks is a platform similar to the popular TED Talks, but for Indian High School Students on topics related to Science, Innovation, and Aspirations. Regular National Contests are conducted online as Elocution or Video submissions. They are published on the GYS Talks YouTube Channel. GYS Talks platform is also open to Teachers and Educators.

GYS Swaminadhan Science Day Talent Test

28th February is celebrated as Science Day in India. GYS Program avails it as an opportunity to encourage Teachers and Students advancing on Innovation efforts. National contests are organized under the brand GYS Swaminadhan Science Day Talent Tests. To make it interesting, the nature of the Contest varies from year to year, but is related to STEM and Innovation. Trophies, Certificates, and Cash Awards are given to winning students and, in some contexts, Teachers too.

GYS SAMASYA KHOJ
A National Problem Identification Contest

To innovate, there should be a problem, a need or an opportunity clearly understood. Samasya Khoj is a national contest to nurture the habit of observation and problem definition. The contest is just on the problem description, not solving it. Intent is that repeated practice of identifying and narrating problems accelerates the opportunity for useful innovation. Problem definition includes a few parameters like where it happens, number of people affected, frequency of occurrence, whether there is a life threat, etc. This contest is intended to run every often for frequent attempts. Good efforts are encouraged with Mementos, Certificates, and Cash Awards.

GYS Avishkar AWARDS 2024
Grooming Student Innovators for the Nation

The pinnacle of all efforts of GETA Young Scientist Program is GYS Avishkar Awards where we bring out Innovations themselves. Students from 6th to 12th standards take part in this National Online Science Projects Competition every year. While entries are submitted from over 20 States in India, experienced Panellists from Academia and Industry evaluate the Ideas and Innovations on parameters like genuineness, newness, potential for productization, and quality of submission. Trophies, Certificates, and lucrative Cash Awards are handed-over in an Annual Event. Guide Teachers of winning projects are also rewarded in Avishkar. An Awards Booklet is published each year presenting successful Innovations.

GYS GURU PURASKAR
Towards Nation Building

Teachers are the Nation Builders. Student Innovation is possible only under the Guidance of Teachers. So, it is vital to recognize and motivate Teachers that go beyond books to train as well as encourage Students to Innovate. GYS Guru Puraskar Awards competition is organized around the Teacher's Day every year felicitating talent as well as interest in Teachers. Written Essays, Video Essays, Online Debates, are a few methods adopted. Recognitions include Trophies, Certificates, and Cash Awards, typically by the hands of a Celebrity.

GYST CLUB
Home for Innovation

Science Clubs in Educational Institutions have been a practice for ages. GETA Young Scientist Talent Clubs, in short, GYST Clubs are yet another platform in High Schools where students get information to their fingertips. Announcements and schedules on Science & Innovation Competitions, Events, Materials, and Projects are shared with GYST Club Members regularly. Seminars, Workshops, Science Exhibitions, Science & STEM Lab Visits, Industrial Visits, Intra and Inter-Club Contests are facilitated for GYST Clubs.

GYS Innovation Knowledge Base

Knowledge is power. GYS Program Team compiled details on over 7500 Student Innovation Projects into a Knowledge Base. Publicly available projects information on Winners and participants in National Level Exhibitions are collected and made available to Students and Teachers in an easily accessible Telegram Channel. Competitions like GYS Avishkar, INSPIRE MANAK, NCSC, IGNITE, NIF Grassroots Innovation Fests are covered. By going through these projects, Teachers and Students get an understanding on what kind of Ideas and Innovations are happening in the Country. In fact, they also provide inspiration to new ideas for further Innovation.

GYS Digital Library

Library is a place of knowledge and wisdom. GYS Program Team collects Science and Innovation related articles, infographics, books and magazines available in the public domain for free access. They are easily accessible on a Telegram Channel. Teachers and Students can search for content, view, read, print, or download.

The Great Indian Scientists Series

Bharat is a country of ancient wisdom, a land of Great Rishis, Gurus, Mathematicians, and Scientists. There were age-old contributions from Charaka, Aryabhatta, Bhaskara, Agastya, Kanada kind of Rishis and Gurus. Modern day too offered eminent personalities like Vikram Sarabhai, Har Gobind Khorana, Shanti Swarup Bhatnagar, M Visvesvarayya, SN Bose, JC Bose, CV Raman, and the list goes on. GYS Team takes pride in compiling works of these Great Indian Scientists in the form of Quick-read Infographics, Flyers, YouTube Playlists, and runs exclusive Talent Tests. The objective of this series is to present such Role Models to be a wonderful source of Inspiration to the younger generation.

GYS YouTube Playlists

Many a time, students look for guidance on competitions and events. GYS Program Team made life pretty easy. There are very rich Playlists for Students and Teachers alike. Someone wants to know about Vidyardhi Vignan Manthan (VVM), someone else is searching for INSPIRE MANAK projects, and yet another student is curious about National Children's Science Congress (NCSC). Teachers are assisted with Tools, Techniques, and Concepts related to Student Innovations. 20 GYS YouTube Playlists are available on competitions and themes like these. New entries are searched for and added to these Playlists every week. It is like all cooked food is ready on a platter. Saves time.

GETA Young Scientist Channel

YouTube Channels are pretty popular and helpful these days. GYS Program features a comprehensive coverage of videos on Innovation and Science Projects. All the noteworthy presentations from GYS Avishkar, GYS Talks, GYS Guru Puraskar, etc. are uploaded here. From time to time, GYS Team provides guidance on Winning Science Competitions. Live coverage of the GYS Program Events is available on this Channel. GYS YouTube Channel is a treasure of Playlists too.

GYS Social Media Channels

Today is the age of Social Media. Facebook, Instagram, X (Twitter), WhatsApp, YouTube, and you name it. GYS Program regularly publishes announcements and information on these Channels. Messages cover Science and Innovation Contests, Events, Material Sources, and Links to Reference Sites. In the first two years of the GYS Program, over 65 lakh messages were pushed through on these Channels. Once registered with the GYS Program, updates are sent on WhatsApp to the Student number directly.

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TAAP RAKSHAK
FIREPROOF MATERIAL

FIRST PRIZE WINNER

Aarush Nag
9th Class

Guide Teacher
Ms Shubhangi Nemade

School
Sagar Public School, Rohit Nagar, Bhopal, Madhya Pradesh

Project Synopsis

One day, at a barbeque, Aarush observed a potato on a stick not catching fire despite being subjected to extreme fire/heat. Similarly, corn, when placed on fire, gets black but does not catch fire. And, the one ingredient both have in common is “STARCH”. He further experimented with starch to find a Fire and Heat-resistant material and came up with “Taap Rakshak”.

Problem Narration

Fire accidents can result in catastrophic personal injury and devastating damage. Every year, billions of rupees in property damage occur as a result of fire. Fire accidents can cause death not only from burns but also from smoke inhalation and toxic gases. So, an affordable and easily manufactured fire-proof material can save many lives.

Solution Description

A quest to find a fire-proof material led me to starch, which is fire and heat-resistant. Further experimentation revealed that mixing it with glue not only increases the binding strength of starch but also increases its resistance to heat and fire. Adding baking soda further improves its anti-fire properties. Later, adding appropriate quantities of urad dal, edible gum, marble powder, lime powder and synthetic glue gave promising results.

Testing Methods:
Scenario 1: Place a sheet of Taap Rakshak over a cardboard house stuffed with cotton. Now, on igniting, the house and cotton burn but the fire-proof sheet neither catches fire nor heats up.
Scenario 2: Crack an egg into a bowl made of Taap Rakshak and light a fire underneath the bowl. After sufficient time to cook, the egg remains raw, which proves the bowl protected it from heat.
Scenario 3: An Iron bar coated with Taap Rakshak when placed in fire, doesn’t melt or deform.

Solution Marketability

All raw materials- cornstarch, urad dal, edible gum, marble powder, lime powder and synthetic glue are affordable and easily available in large quantities. To manufacture the fireproof material a mixture unit and appropriate conduits are required with skilled manpower. Iron rods can either be coated at the manufacturing site or a separate manufacturing unit can established.

Link for the project's video presentation
https://www.youtube.com/watch?v=3lfxj9EPzOc&t=3s

SECOND PRIZE WINNER

AMCERD-F

ARTIFICIAL MOISTURE CONTROLLED FRUIT RIPENING DEVICE

Lakshya Raj Singh Thakur
11th Class

Guide Teacher
Ms Shubhangi Nemade

School
Sagar Public School, Rohit Nagar, Bhopal, Madhya Pradesh

Project Synopsis

People use chemicals for ripening fruits which cause various diseases. And older methods don't give good market value for the fruits. This project aims to increase ripening efficiency and decrease the spoilage rate of fruits. As a result, this device provides specific temperatures for specific fruits using low-cost eco-friendly materials. So, now ripening fruits is easy and can be used by fruit sellers and shopkeepers.

Problem Narration

Nowadays people use harmful chemicals like Calcium Carbide and China Masala to speed up the process of fruit ripening due to which fruits often get rotten and spoiled. These chemicals contain carcinogenic agents which are lethal to human health. They cause diseases like cancer, Alzheimer's, cerebral edema, etc. This problem affects both the fruit vendors and the people consuming these fruits.

Solution Description

AMCERD-F is a device that naturally ripens fruits from inside and outside at the required temperature without harming people's health. It is made of an old wooden mango box installed with a bulb as the heating element, a cooling fan with honeycomb pads and a motor. The cooling system works on the simple desert cooler principle. These temperature-maintaining elements are controlled with the help of a temperature-controlling sensor.

In addition, insulating materials are also installed. It is made up of three layers. The first is a mixture of soil, husk and sawdust. The Second layer is "Fruit Peel Paper", a special paper prepared and tested to absorb the extra moisture content in the internal environment of the device preventing any growth of fungus. Multiple layers of fruit peel paper are also used as trays inside the device so that the extra moisture released by the fruits placed on it can be absorbed.

Solution Marketability

The prototype was tried in live situations, using bananas and papayas. Generally, a banana takes 4-5 days to ripen using chemicals. But with AMCERD-F a banana is ripened in 2-3 days. The prototype can store 1 kg of fruits and costs around 1500 to 2000 rupees. All raw materials are easily available and are eco-friendly.

Link for the project's video presentation
https://www.youtube.com/watch?v=xaQf19dkd5k

MACMED

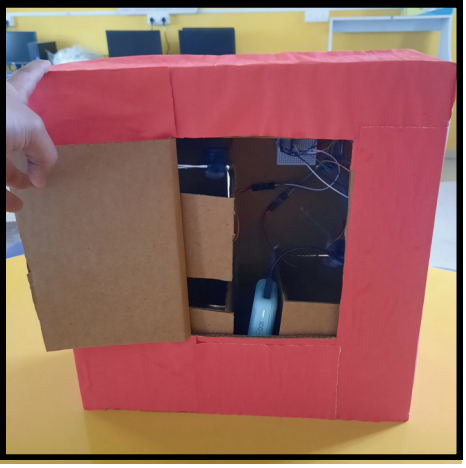
Sanjana V
9th Class

Guide Teacher
Mr Rehan Sanadi

School
Government Saraswati Girls High School, Belagavi, Karnataka

Project Synopsis

The Medicine Vending Machine Project presents a practical and efficient solution for medication dispensing, addressing the evolving needs of healthcare. By combining RFID technology, Arduino control, and user-friendly interfaces. This project strives to improve accuracy, accessibility, and overall patient care in the field of medicine distribution.



Problem Narration

People living in rural areas lack hospitals and medical stores. The availability of general medicine in such areas is also a major issue. Delayed medical treatment may result in aggravated health conditions.

Solution Description

The Medicine Vending Machine Project presents a practical and efficient solution for medication dispensing, addressing the evolving needs of healthcare. This is an automated system for dispensing medicines using RFID technology, Arduino microcontroller, 16x2 LCD display, servo motor and a battery. The patient can easily access the medicine by scanning an RFID tag.

Solution Marketability

The Medicine Vending Machine is useful for people who live in rural areas and have a lack of hospital and general medicine shops and in emergency use, hospitals, clinics, and pharmacies, offering a secure and automated way to dispense medications. It enhances patient experience by minimizing waiting times while minimizing the risk.

THIRD PRIZE WINNER

Link for the project's video presentation
https://www.youtube.com/watch?v=XILDxCoy4i4&t=58s

CALIPER-X

PROSTHETIC LEG IMPROVED MODEL

CONSOLATION WINNER

Divyam Agrawal
12th Class

Garvit Agrawal
10th Class

Guide Teacher
Ms Suchi Dixit

School
DAV Public School,
Kailash Hills, Delhi

Project Synopsis

This is an improved version of a prosthetic leg device k/a caliper. There are several caliper models but are too expensive and are not based on user feedback. Caliper – X is a user developer-based model that has undergone 20 real test trials to contribute to people's lives.

Problem Narration

Divyam observed his parents who are both Polio patients struggling every day with major issues like knee bending problems, cuts on the skin, carrying issues, weight, and most importantly, the cost of better-supporting instruments.

Solution Description

It is based on the structural arrangement of various locks improving the existing ones to provide support to the leg region. The development involves a systematic approach to ensure proper fit, functionality and comfort to the user.

Solution Marketability

Once people add the dimensions of their legs, they can easily get the product. One product costs about Rs. 4600, where profits come to around Rs. 200. The making cost can be reduced to Rs. 3500 from bulk orders of around 3000 nos.

Link for the project's video presentation
https://www.youtube.com/watch?v=SNyAUu6o5SU&t=8s

CONSOLATION WINNER

AI-BASED COMA PATIENT MONITORING SYSTEM

Keerti R Kumavath
9th Class

Vedashri A Kulkarni
9th Class

Guide Teacher
Mr Santosh S Hiremath

School
SBS Kanya Shala High School, Nippani, Belagavi, Karnataka

Project Synopsis

The Coma Patient Monitoring System is an AI and IoT-based solution designed to enhance the monitoring of coma patients. This system continuously monitors the eyes and mouth of patients through a webcam. When a patient opens their eyes or mouth, the system triggers an audible alert and sends real-time notifications to medical staff via Blynk IoT. The integration of a microcontroller ensures reliable management of alert signals, making this system a valuable tool in critical care environments, home care and rehabilitation centers.

Problem Narration

The Coma Patient Monitoring System is an AI and IoT-based solution designed to enhance the monitoring of coma patients. This system continuously monitors the eyes and mouth of patients through a webcam. When a patient opens their eyes or mouth, the system triggers an audible alert and sends real-time notifications to medical staff via Blynk IoT. The integration of a microcontroller ensures reliable management of alert signals, making this system a valuable tool in critical care environments, home care and rehabilitation centers.

Solution Description

Coma Patient Monitoring System uses a webcam to continuously monitor the patient's eyes and mouth. OpenCV technology is employed to detect movements such as eye-opening and yawning with high accuracy. When such movements are detected, the system generates an audible alert to immediately inform nearby staff. Simultaneously, a signal is sent to an ESP8266 module, which utilizes the Blynk IoT platform to send real-time notifications to medical staff via email and mobile alerts. This ensures that healthcare providers are promptly informed and can take immediate action.

Solution Marketability

The Coma Patient Monitoring System can be manufactured in large volumes in a cost-effective manner. The manufacturing cost of each product is ₹2000/-.

Link for the project's video presentation
https://www.youtube.com/watch?v=TFeMgLjyS_o&t=59s

GRADIENT DOORS FOR TRAIN

Banavath Yuvajyothi Bai
10th Class

M Meenakshi
10th Class

Guide Teacher
Mr A Venkata Jaikumar

School
APTWR School of Excellence, Srikalahasti, Andhra Pradesh

Project Synopsis

Gradient door for train is aimed at enhancing safety for disabled individuals and senior citizens. The gradient doors are equipped with ease-of-use controls, allowing passengers to request assistance, if required. It is also very helpful during rush hours to streamline the boarding process. In future, this concept can be further improvised by incorporating sensors in this system.

Problem Narration

The height difference between train and platform poses difficulties for wheelchair users, pregnant women, kids and physically challenged individuals. People also face issues while carrying heavy luggage inside the train.

Solution Description

The gradient door can be implemented by using CD drive mechanism or automatic hydraulic pump mechanism. Whenever a station is reached, the passengers press the switch placed near them or they are centrally controlled by the loco pilot. Once the switch is pressed, the door is opened slowly, to avoid any accidents.

Solution Marketability

The prototype cost is approximately 2000/-. And also, the actual cost can be reduced with bulk orders.

CONSOLATION WINNER

Link for the project's video presentation
https://www.youtube.com/watch?v=8uEMSh6oqMM&t=38s

FARMER'S FRIENDLY BICYCLE

CONSOLATION WINNER

Avvaru Gowri Supriya
8th Class

Guide Teacher
Mr B Titus

School
CK JRC High School, Mangalagiri, Andhra Pradesh

Project Synopsis

Farmer's friendly bicycle is aimed at enhancing the livelihood of farmers by allowing farmers to carry out multiple activities including ploughing, seeding, weeding, watering, fertilising, spraying pesticides and drying the grains from a single bicycle. This idea struck Supriya when her parents struggled to do farming, as they could not afford high-cost agricultural equipment.

Problem Narration

Farmers face significant barriers when it comes to accessing high-cost agricultural equipment. It can hinder productivity and affect overall sustainability in farming practices. It is impossible to purchase equipment for each activity and is not portable.

Solution Description

Farmer's friendly bicycle can be used to carry out various agricultural works. As this works on solar energy, it reduces the electricity charges to a large extent. The materials used are motor, bicycle, old bicycle parts, light, batteries, solar panel, water can, rubber pipes etc. Multiple attachments can be added to this bicycle to carry out most of the agricultural work. This is low-cost and portable, helping the livelihood of the farmers to a great extent.

Solution Marketability

This is a low-cost alternative to expensive agricultural equipment.

Link for the project's video presentation
https://www.youtube.com/watch?v=drNj12-JT9Y&t=58s

AUTO SWITCH (PERSON COUNTING DEVICE)

CONSOLATION WINNER

Ashish Kumar
12th Class

Guide Teacher
Ms Shatakshi Rana

School
PM SHRI Govt. Sr. Sec. School, Chakkarpur, Gurugram, Haryana

Project Synopsis

Autoswitch counts the number of people inside the room and accordingly activates the lights and fans inside. Ashish came up with this idea when he was trying to automate the light and fan of his house using PIR (passive infrared) motion sensor. As he observed that it is not an ideal solution, he worked on an alternate solution. He developed an algorithm that works on bidirectional motion prediction principle. The main aim is to provide a low-cost alternative that is being used by large corporations.

Problem Narration

Using a PIR motion sensor resulted in many issues. The sensor is not suitable for operation above 35°C which leads to false positives most of the time under Indian conditions. It cannot detect small movements like typing, reading, writing, sitting in one place for too long. Since it works properly in LOS(line of sight), multiple sensors are needed in a single room which increases the cost of the system. The main aim of this project is to provide an alternative solution in a cost-effective manner.

Solution Description

Autoswitch counts the number of persons in the room at any given time. The project uses two ultrasonic sensors to obtain true or false values. True value is given when the person comes within a specified distance to avoid doors otherwise False value is assigned. Out of two sensors, one is installed outside the room (sensor 1) and the other one is installed inside the room (sensor 2). The algorithm is as follows: if True appears in increasing order of no. of sensors, it is recorded as the person is entering the room and vice-versa. The total count is either increased or decreased by 1 each time. The total count is considered to enable lights and fans inside the room. It also incorporates a temperature sensor to efficiently utilize the resources.

Solution Marketability

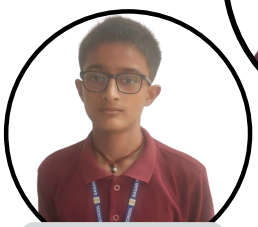
The components and the associated cost of this project are Arduino uno (Rs. 200), 2 Ultrasonic sensors (Rs. 100), a relay module (Rs. 50), and a Bluetooth module (Rs. 150). The overall cost of the system is Rs. 500, and it can be further reduced with bulk production in contrast to the cost of one Pir motion sensor which costs more than Rs. 500.

Link for the project's video presentation
https://www.youtube.com/watch?v=5rqHB4faCww&t=193s

CONSOLATION WINNER

SMARTY WASHER

Rudraksh Chaturvedi
7th Class



Atul Pandey
7th Class

Guide Teacher
Mr Ashutosh Kumar

School
Sagar Public School, Rohit Nagar, Bhopal, Madhya Pradesh

Project Synopsis

The Smarty Washer is a hygienic utensil cleaning solution designed for street food vendors and bachelors. Recognizing the unhygienic practice of reusing the same water for washing utensils, we developed a three-chamber system for effective cleaning. By automating and standardizing the cleaning process, Smarty Washer aims to significantly improve hygiene standards in utensil washing.

Problem Narration

Street vendors often wash plates multiple times in the same unhygienic water causing food poisoning and other stomach problems. In addition, washing all the plates is time-consuming which eventually effects productivity of their work.

Solution Description

Smarty washer is a revolutionary solution addressing critical hygienic issues reducing labor time. The cleaning is carried out in 4 stages.

- Stage 1: The first chamber pre-cleans the utensils with high-pressure water.
- Stage 2: Utensils are cleaned in the second chamber with motorized soap dispensing and rotating scrubs for deep cleaning.
- Stage 3: The stage uses the first chamber again for a final rinse.
- Stage 4: The third chamber dries the utensils.

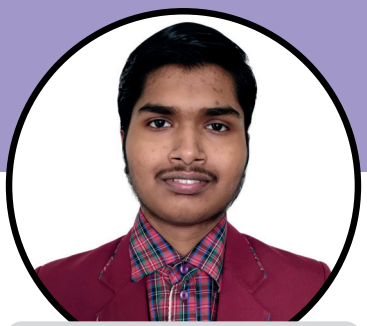
Solution Marketability

The making cost and selling cost of Rs. 2500 and Rs. 3500 respectively. The initial investment needed is Rs. 50,000.

Link for the project's video presentation
https://www.youtube.com/watch?v=dbCUplvZ9TU&t=122s

CARES

ANIMALS ON ROADS ENHANCEMENT OF SAFETY



Ayushman Sahoo
12th Class

Guide Teacher
Mr Er Bishnu Charan Swain

School
DAV Public School, Kalinga Nagar, Bhubaneswar, Odisha

Project Synopsis

Stray animals pose a significant threat to road safety and animal welfare in India, with motor vehicle accidents causing injuries and fatalities to both humans and animals. This project proposes a comprehensive approach which involves two components: utilization of nylon belts with fluorescence for improved animal visibility during night-time and integration of sensors to detect accidents and communicate with veterinary services. The project aims to reduce accidents involving animals and promote the well-being of both animals and humans.

Problem Narration

Statistics from major Indian cities indicate that cows alone account for 28.4% of road accidents involving stray animals, posing risks to both human safety and agricultural productivity. This project also addresses the issue concerning nearly 60 million pets that are homeless or missing. With today's hectic schedule, keeping track of the health of pet animals is very difficult, resulting in their illness.

Solution Description

Integration of nylon belts with fluorescence serves a dual purpose: enhances the visibility of animals to drivers, especially in low-light conditions, and ensures the comfort and well-being of the animals. To further enhance the safety of animals, this system employs accelerometers, gyroscopes, GPS and various other sensors to detect any abnormality in the animal's health by monitoring vitals like BPM, SPO2 levels and temperature. The system also promptly alerts nearby veterinary services, providing them with the animal's location for swift medical intervention which contributes to the efficiency of emergency response. This device also aims to keep track of the pet animals and inform the owner when they cross a certain area marked by the user.

Solution Marketability

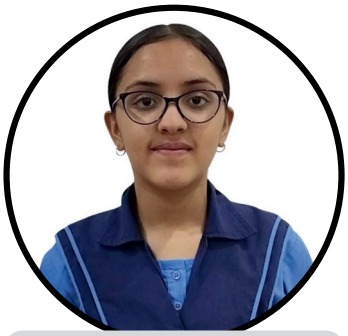
Both B2B and B2C approaches can be taken up to sell this device to individual cattle owners, farm owners and businesses like FPOs, co-operatives and municipal corporations. It will also be sold on a subscription / lease-based model for increased affordability to the user. The device will also be available to pet owners through e-Commerce or directly into the offline market. It can be used on various animals by choosing the suitable mode in the app. Once commercialized, the device will be very economical.

Link for the project's video presentation
https://www.youtube.com/watch?v=abxxFJ-Fz3Q&t=97s

CONSOLATION WINNER

CONSOLATION WINNER

SMART UMBRELLA



Mayuri Sharma
9th Class

Guide Teacher
Ms Samiksha Singla

School
Bhartiya Vidya Mandir Sr. Sec. School, Kitchlu Nagar, Ludhiana, Punjab

Project Synopsis

Smart umbrella is a solar umbrella that harnesses solar power to provide a cool environment during harsh conditions and provide the location of hawkers/vendors to the customers. During the Covid-19 period, it was difficult to track the location of vendors. Inspiration came to her from Swiggy and Zomato to locate the position of hawkers/vendors to the users. This project is more useful to those who cannot afford mobile phones.

Problem Narration

In tropical places heat waves frequently happen on bright days during the summer, with temperatures occasionally exceeding 42 degrees Celsius. Hawkers and vendors who work in the scorching heat of the sun may face many health problems like heat stroke, dehydration, dry skin etc. In addition to this, with the advancements in technology, hawkers are not able to provide customer service compared to multinationals.

Solution Description

In the metropolitan area, about 70% of the population uses umbrellas in their daily lives to protect themselves from the heat of the sun. This solar energy is used to produce electricity and is stored in rechargeable batteries. This energy is used to power a light and a fan which is useful in all weather conditions. A GPS tracker is placed in the umbrellas of vendors to give their location to the customers.

Solution Marketability

Solar umbrellas are sustainable and environment friendly which help to reduce dependence on non-renewable energy resources and contribute to a cleaner, greener environment. It needs less investment, low maintenance and is suitable for the safety of vendors and theft recovery.

Link for the project's video presentation
https://www.youtube.com/watch?v=ywPXKZYJcHs&t=72s

ALERT DRIVE HEADGEAR

Alfiya Shafiqullah Khan
10th Class

Guide Teacher
Mr Nitesh Dashrath Bilagunde

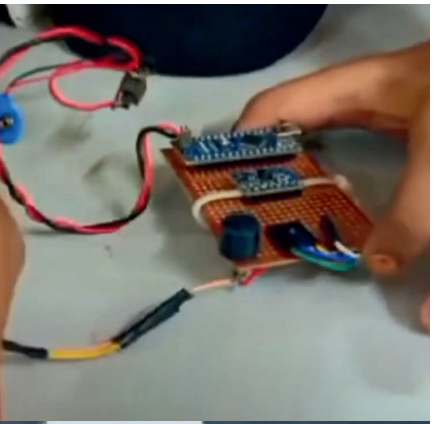
School
Chhatrapati Shivaji Vidyalaya, Dharavi, Mumbai, Maharashtra

Project Synopsis

Alert Drive Headgear is a device that alerts a sleepy vehicle driver to become attentive. One day, Alfiya's uncle decided to drive home despite feeling exhausted. As his eyes started to feel heavy, he tried to stay awake by turning up the radio and rolling down the window, but of no use. Suddenly his car drifted off the road and hit the tree ahead. He woke up just in time to see a tree ahead, but it was too late. With some help, he was taken to a nearby hospital and was lucky to survive. This inspired Alfiya to develop the "Alert Drive Headgear" system to alert the driver under such circumstances.

Problem Narration

Driving without full consciousness results in loss of lives due to accidents. Despite trying multiple methods one can fail to stay awake inside the vehicle. This might lead to fatal accidents and deaths.



Solution Description

To alert the driver, a circuit board is designed and attached to the cap of the driver. Whenever the cap is bent down above a certain angle for a predetermined duration, the circuit sends an alert to the driver by using vibration and buzzer sensors. These sensors are connected to arduino nano and ADXL accelerometer, which are mounted on a PCB circuit board.

This project aims to prevent accidents like in the case of her uncle and make the roads safer for everyone.

Solution Marketability

The project aims to prevent driving accidents caused by drowsiness using a cost-effective device. The estimated cost per unit ranges from Rs.760 to Rs.1340. By partnering with manufacturing industries, this project can offer an efficient solution to enhance road safety.

CONSOLATION WINNER

Link for the project's video presentation
https://www.youtube.com/watch?v=Hhbn-bevLEQ&t=4s

AUTOMATIC CLOTH DRYER

Daksh Dubey
11th Class

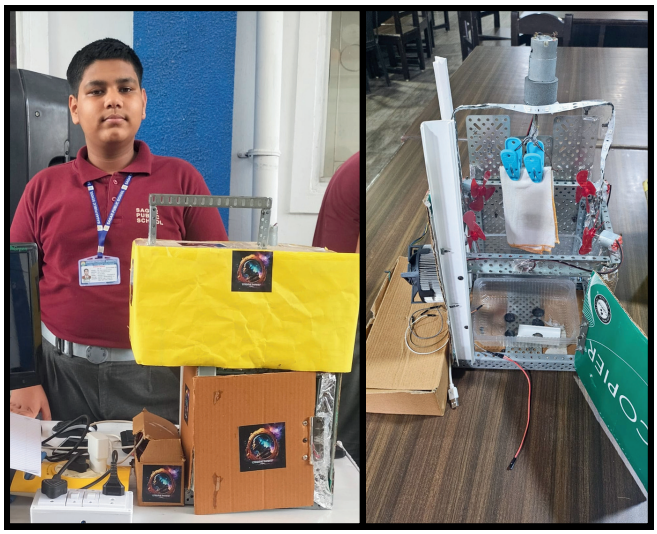
CONSOLATION WINNER

Guide Teacher
Mr Ashutosh Kumar

School
Sagar Public School, Rohit Nagar, Bhopal, Madhya Pradesh

Project Synopsis

Insufficient clothes drying due to lack of sun and space especially during the rainy season leads to health-related issues. It is overcome by an automated drying system which provides a controlled environment to dry the clothes most efficiently. It includes a rotatable clothes hanger and humidifier to accelerate drying. It is a convenient, efficient and hygienic solution for drying the clothes by optimising the drying conditions and eliminating any manual intervention.



Problem Narration

The most common method of drying clothes is associated with inefficient drying, particularly during the rainy season. It often leads to the growth of mould and bacteria over wet clothes due to prolonged drying time, resulting in significant health risks to the individuals. It demands an automated solution which can effectively dry clothes in all weather conditions, helping with minimal labor and time associated with it.

Solution Description

The Automatic Cloth Dryer is designed to efficiently and hygienically dry clothes. It features a rotating clothes hanger to facilitate an even drying from all sides, four fans and a humidifier to accelerate the drying process. The combination of all these devices results in optimal drying during all weather conditions. The automation of the drying process saves time, reduces manual effort and prevents the growth of harmful microorganisms on wet clothing.

Solution Marketability

The selling cost of the current model is Rs.4000. However, with funding of around Rs.60000, the project can be upgraded with additional features. The selling price can also be reduced to Rs.2500 from the bulk orders.

Link for the project's video presentation
https://www.youtube.com/watch?v=yjgKMnvzdlI&t=35s

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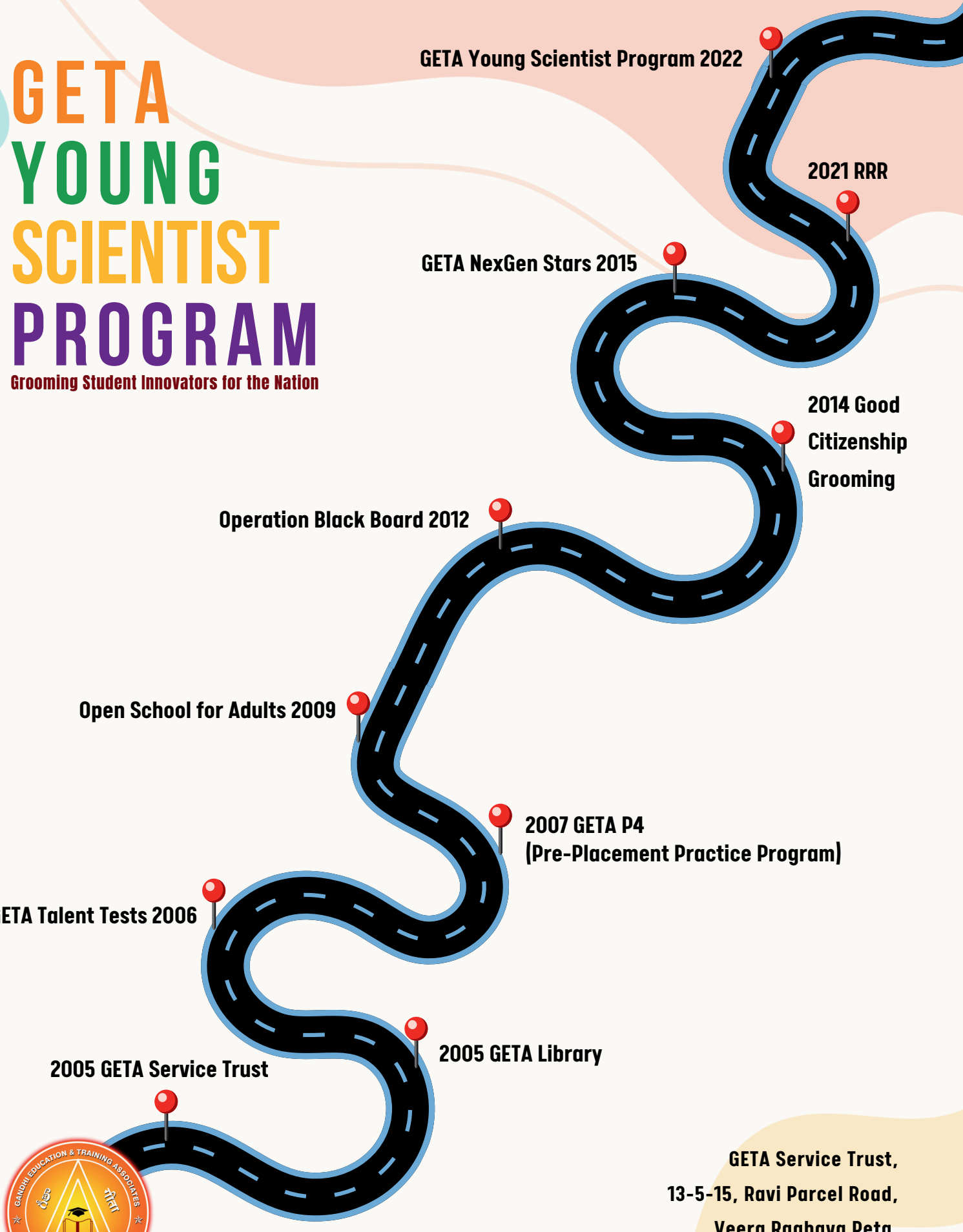

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