

Young Innovators' Program 2018



Branding and
Relations Cell,
IIT Kharagpur

Young Innovators Program 2018



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Relations Cell,
IIT Kharagpur

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THE DIRECTOR

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Message From The Director



I

magination, Albert Einstein said, is more important than knowledge. For knowledge is limited, he said, whereas imagination embraces the entire world. The best thing about being young is that imagination often has a free reign, unconstrained by the heavy dose of reality that often limits an adult's vision and imagination. It is this imagination that we wanted to tap and encourage through the Young Innovators' Program. IIT Kharagpur has also set up an Atal Tinkering Lab in a school on its campus, precisely with the purpose of encouraging children to take a leap with their imagination. It is necessary to make children feel confident to ask questions, to think differently, to read beyond what is prescribed by their curriculum. In children's quiet confidence to embrace the new lies India's future as an Innovation hub. I am happy to see the response to the second edition of YIP. I hope more schools and more children become involved in this free-spirited innovation challenge in the coming years.

Best Wishes,

Prof. Partha Pratim Chakrabarti,

Director, IIT Kharagpur

Message From The Dean



B

every generation grows up facing a new set of challenges. We, the grown ups of today, in our haste to have a "better" life, have made some serious damage to our home planet. There is no denying that we have moved millions out of poverty around the world, we have dramatically increased life expectancy, literacy, food supply and communication, but in our haste to have more and more things cheaper and faster, we also have pumped billions of tons of carbon dioxide into our air and billions of tons of plastics into our waters. This is the mixed bag that the youngsters of today are inheriting from us - tremendous progress on the one hand, and a looming environmental catastrophe on the other.

I am nevertheless convinced that the kids of today - the leaders of tomorrow - will rise to the challenge and come out winners. They have the imagination and the perseverance necessary to solve these serious problems. I am also convinced that, as their tools, they will need to develop a radically new set of technologies. So, in a small and humble way, this is our way of investing in our planet's future - by encouraging the best and the brightest of the next generation to start early and embark on their path of discovery.

Best wishes,

Prof. Baidurya Bhattacharya,

Dean, International Relations,
IIT Kharagpur

Message From The Associate Dean

IN



The Young Innovators' Program (YIP) of IIT Kharagpur is indeed a very unique event that our Institute started two years back. We just hosted its second edition. It is an event where we give an opportunity to school children to showcase their vast talent and come up with innovative ideas, which show their ability to think beyond what is taught in class and use classroom learning to solve relevant scientific and research problems of the country. The two events that I have witnessed personally, first time as a judge and the second time as part of the organizing team as a faculty volunteer, are indeed an eye-opener for me. The kind of talent and the kind of innovations we saw from these bright young 'kids', if I may use the word colloquially, was mind-blowing. I have no qualms in saying that these children are far better than what I was at their age. I couldn't imagine at that age that I would be able to do something that these children exhibited. It really showed their ability to think hard, to push the boundaries of their imagination and their urge to do something that is useful and relevant to society. I really hope that this event keeps going and keeps growing as the years go by, and becomes one of the flagship events of this country for school children.

Best wishes,

Prof. Anandaroop Bhattacharya,

Associate Dean, International Relations
IIT Kharagpur

About YIP

Young Innovators' Program is a platform to foster young minds with scientific enthusiasm and a credo to solve the problems facing the globe. This program is an attempt of IIT Kharagpur to recognize students with creative ability to conduct scientific research. Student innovators from classes 8 to 10 participated in Young Innovators' Program 2018 presenting their ideas in diverse themes : Clean energy , Health and Cleanliness, Resource Management, Hardware Modelling, Product Designing and Disaster Management.

YIP 2018 was conducted in four rounds. The first two rounds were online. The top 24 teams were invited to IIT Kharagpur for the semifinal round and were made to demonstrate their models in front of the professors of IIT Kharagpur. The feasibility and sustainability of the models were the prime criteria for the selection procedure.

The second edition of Young Innovators' Program was a huge success with a reach of 1000+ schools. The students of IIT Kharagpur made every effort to spread the word about the Young Innovators' Program across the nation and were successful in getting 1000+ student participants from all over India. Two teams from Singapore also participated in the event and successfully made it to the semi-finals. Young Innovators' Program has now become a well recognized innovation competition across the globe. In a three day visit to IIT Kharagpur, students got a chance to explore the scientific environment within and an opportunity to present their models in front of distinguished researchers and guests.

STAGES OF THE EVENT



Round 1

- Selection based on abstract of the project submitted
- Selection Criteria : Novelty, approach and background of the project
- Mode : Online submission



Round 2

- Selection based on short synopsis of the project (along with a short video of the working model)
- Selection Criteria: Cost-effectiveness and sustainability of the project
- Mode : Online submission



Round 3

Model
Demonstration

- Selection based on model demonstration, presentation and background research done
- Selection Criteria : Feasibility, Frugality and presentation
- Mode: Model demonstration at IIT Kharagpur

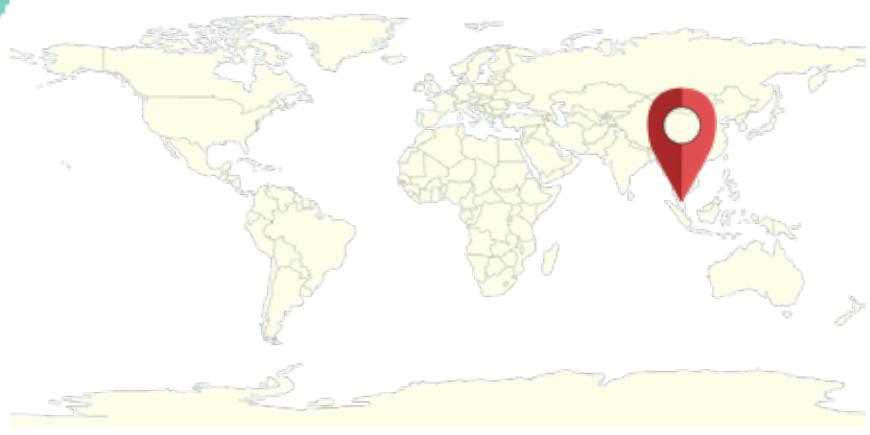
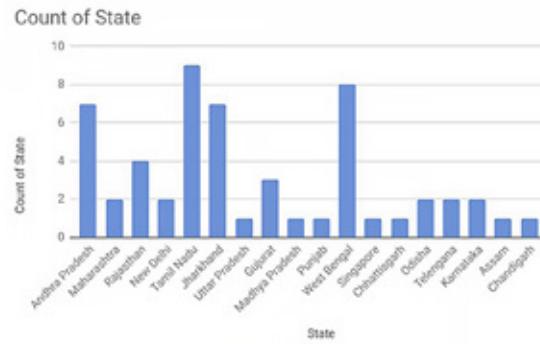


Round 4

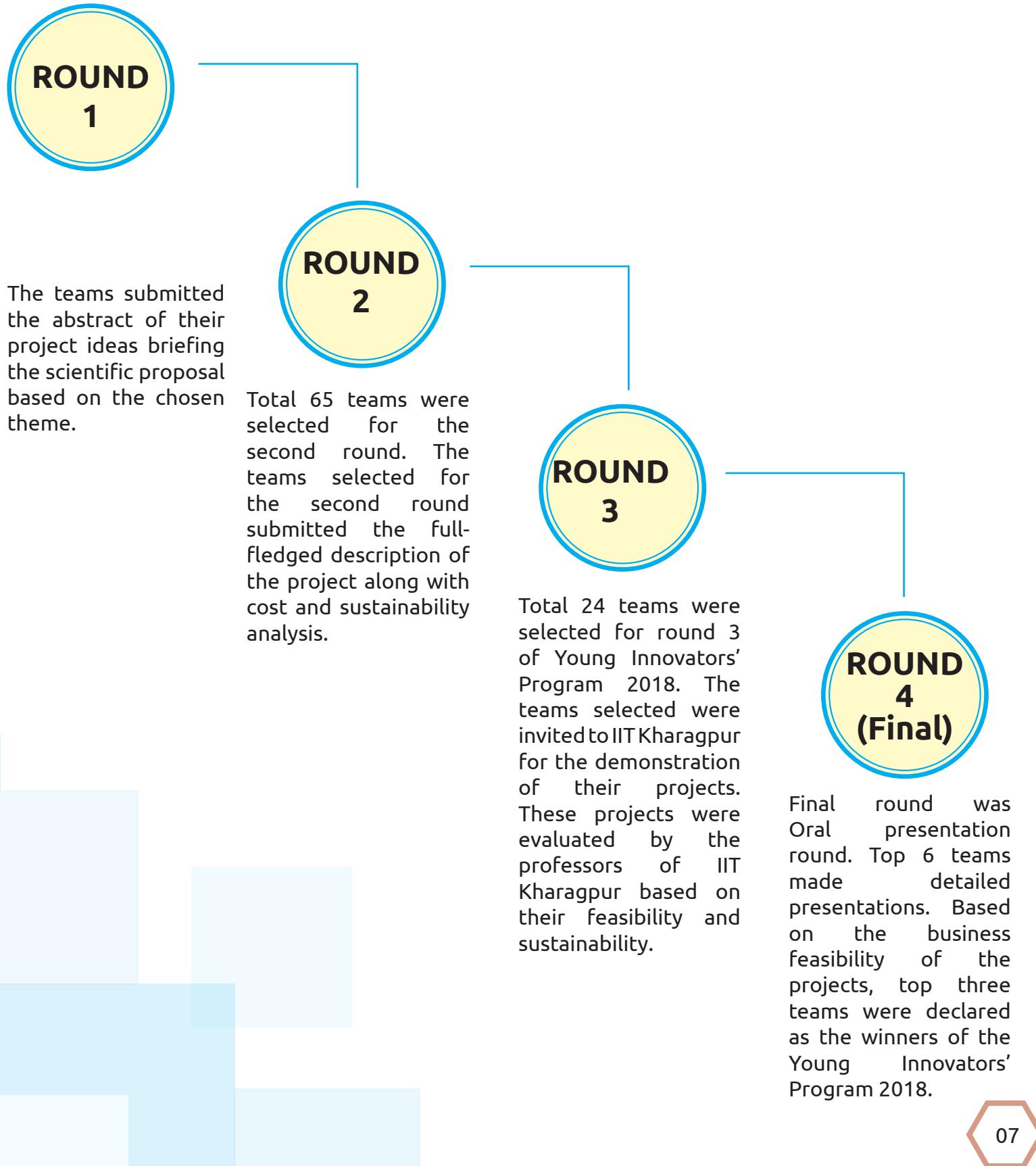
YIP
Symposium

- Selection based on commercial feasibility assessment and enthusiasm of the students for bringing the idea into practice
- Selection Criteria: Business feasibility
- Mode: Oral presentation at IIT Kharagpur

STATEWISE DISTRIBUTION



SELECTION PROCEDURE



WINNERS



Kaanger Valley Academy,
Raipur

1st RUNNERS UP



The Crossword School,
Guntur

2nd RUNNERS UP



Tarapore School,
Jamshedpur

A FEW MOMENTS...



A FEW MOMENTS...



ROUGHING IT OUT



AMEYA WORLD
SCHOOL,
VISHAKHAPATNAM

Aimed at improving traffic discipline on the roads, reducing pollution and overspeeding of cars in the process, this team came up with the concept of In-Built Traffic Controller Bars. Made with cost effective materials like polyester balloons, stainless steel rods and the like, this concept, if implemented, can help avoid signal jumping, which will help reduce the number of accidental deaths on the roads.



BP VIDYA MANDIR, NAGPUR

Using the simple principle of electricity generation from the relative motion between the high velocity wind and blades of a turbine installed on the roof of trains, this team's project provided an innovative solution for tackling the problem of clean energy generation. This simple idea will be able to save a lot of money spent on the extraction of coal and petroleum, and reduce emission of harmful gases like carbon dioxide and sulphur dioxide in the environment.



CARMEL JUNIOR COLLEGE, JAMSHEDPUR

The large amount of heat liberated in the atmosphere from running some home appliances like ACs and refrigerators is harmful for the atmosphere and increases global warming. This team proposed to use this wasted energy to generate electricity through the use of thermal peltier modules that generate electricity due to temperature difference between its sides. In these times when clean energy is at a premium, this model could be put to use as an alternative source of energy.



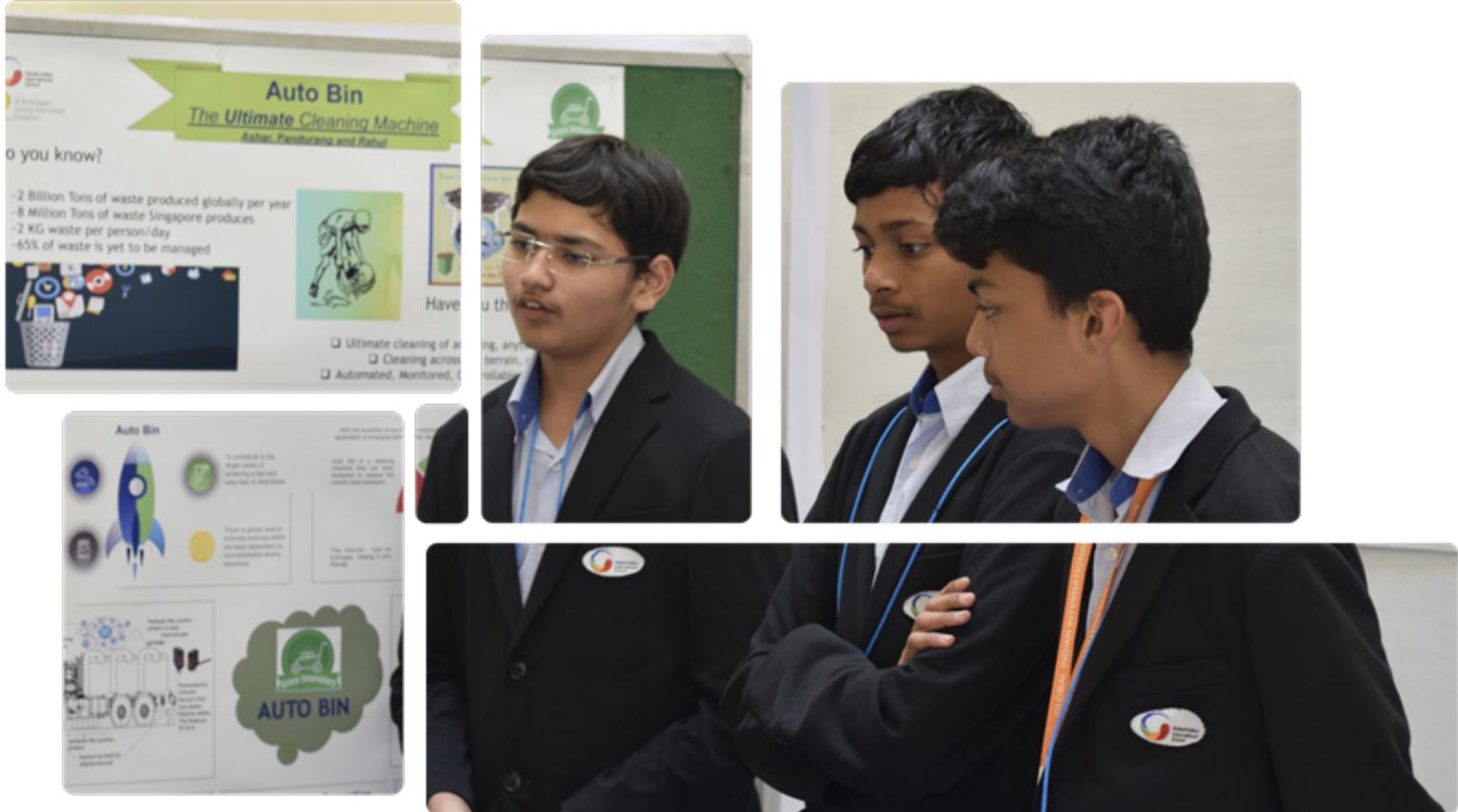
CHELLAMMAL.. VIDHYALAYA, TRICHY

With a vision to minimize the landfill waste caused by plastic bottles and reduce the damage caused by iron barricades, this team came up with an idea of making plastic barricades. Made with the help of plastic water bottles, these barricades would not only be simple and easy to construct, but would also be of extremely cost effective.



DELHI PUBLIC SCHOOL, VISHAKHAPATNAM

With the help of a product named Smarthelper, this team strived to help the visually challenged gain greater self-independence and self-esteem. Through the use of ultrasonic sensors and bluetooth technology, Smarthelper determines when its user has deviated too far from his/her path and alerts friends immediately over the phone. This would assist the visually impaired in exploring the world on their own.



GLOBAL INDIAN INTERNATIONAL SCHOOL, SINGAPORE TEAM 10

Coming all the way from Singapore, team Green Innovators presented the idea of developing an Auto Bin that would be able to replace road sweepers. This automated cleaner would not only sweep away the dust but also remove the dust permanently by using electrostatic attractors and suction pickers. The solution proposed by them could inspire others to innovate new eco-friendly automobiles.

ROUGHING IT OUT



Our second team from Singapore, Techgens, proposed a self-watering plant which would save people the trouble of watering plants daily. Using only a moisture sensor and a tank, they could easily implement their idea on all types of plants. By preventing overwatering and ensuring optimum supply of light, this method also helps in increasing the survival chance of plants substantially.

GLOBAL INDIAN
INTERNATIONAL
SCHOOL,
SINGAPORE (TEAM 2)



KAANGER VALLEY ACADEMY, RAIPUR

The winners of YIP 2018, team Anti-Pollution Mask, came up with the most simple yet effective idea for dealing with the problem of pollution. Based on the cleansing properties of charcoal, they devised an anti-pollution mask that is reusable, cheap and can be easily prepared at home. Most importantly, it can be used by people from all walks of life and by all age groups, young and old alike.



These students from Bhubaneswar developed an innovative biosensor by assessing the effect of smoke particles, emitted by different types of automobiles, on the growth and development of Zebrafish (*Danio rerio*) from the embryo stage to the larvae stage. Expensive chemicals were not used in the project. The sample collection was innovative and cost-effective. This biosensor is quite efficient for assessing developmental toxicity, DNA damage and metabolic toxicity, and hence, it has proved to be a promising *in vivo* model for further research.

KIIT INTERNATIONAL
SCHOOL,
BHUBANESWAR



LAKSHMIPAT SINGHANIA ACADEMY, KOLKATA

Their project was to create a water purifier that enhanced the efficiency of water purification and life expectancy of a general RO system. This was made possible by adding two extra stages after the RO - a post silver activated carbon cartridge to enhance the taste, and a mineral filter to add necessary minerals and make the water consumable. These innovations increased the life expectancy of the RO system by more than two years and is an affordable solution for water purification.



MODERN HIGH SCHOOL FOR GIRLS, KOLKATA

This team came up with a model to enhance light transmission through a Solar Bottle Bulb in homes without electricity. This project will light up millions of homes at a negligible cost, especially without affecting our nature. It will rather preserve it, and thus have an immensely positive impact. This clean energy helps reduce carbon footprint, reduces global temperatures and, with a little improvisation, can be fitted onto the terracotta tiles used in rural India as roofing material.



MOTHER'S PUBLIC SCHOOL, BHUBANESWAR

The students aimed to reduce air pollution from vehicular emissions through a simple and cost effective model. This model works without the use of fuels such as petroleum and, if implemented, can help in bringing down air pollution levels significantly.

SANSKRITI... THE GURUKUL, GUWAHATI

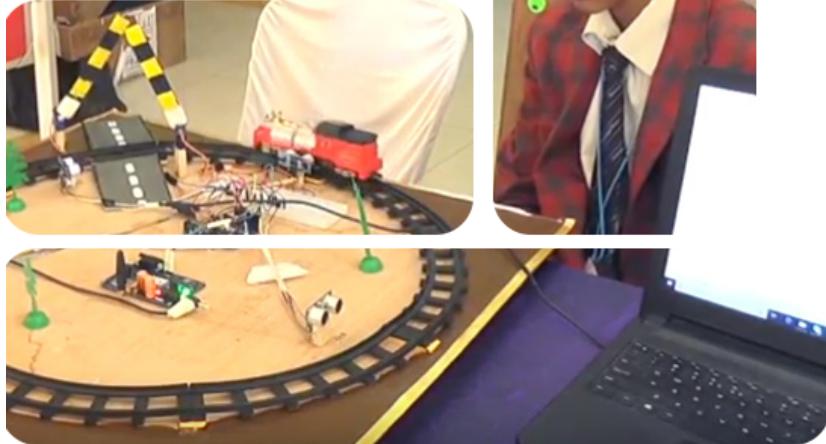


The students designed a filter to be placed alongside streets and other high pollution zones to absorb greenhouse gases and pollutants, mainly nitrous oxide and carbon dioxide from the atmosphere, to reduce the adverse effects of global warming.



NAGARJUNA VIDYANIKETAN, BANGALORE

To come to the aid of the 253 million visually impaired people worldwide, a product named Vision Alert was designed by this team. Vision Alert is a probing cane with additional features such as obstruction alerting system, security system, PDA system, GSM module, navigation unit and biometric unit. A highly durable and cost effective model, this product is definitely earmarked for the future.



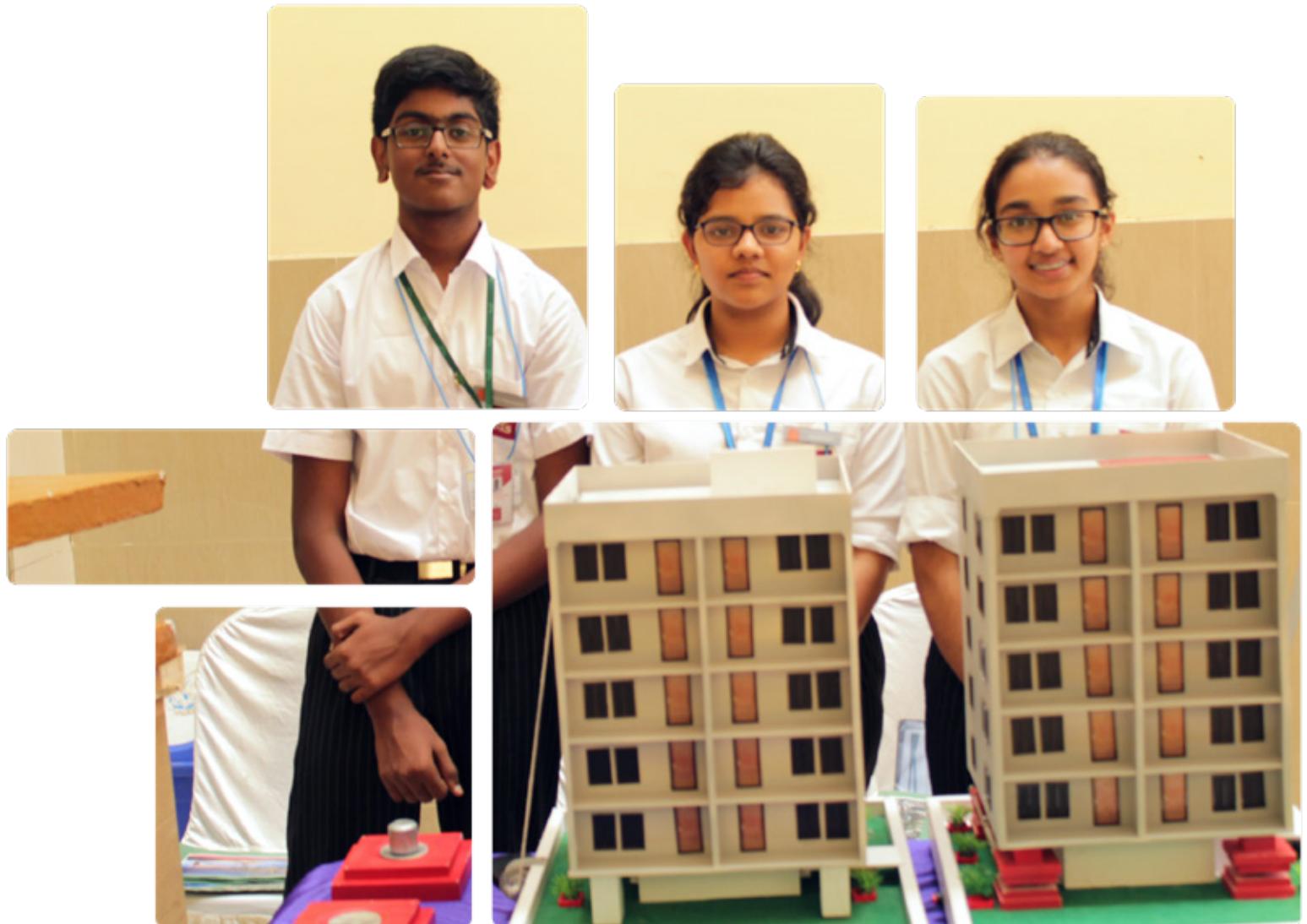
With almost half the total rail accidents taking place at railway crossings, there is a need for a device that removed this flaw. Thus, Team AutoCross came up with a fully automated level crossing system that would eliminate the dangers arising from unmanned level crossings. This simple idea, realized with the help of Arduino IDE, Servo motors and ultrasonic buzzers, can really help in the drastic reduction of mishaps due to negligence.

CAMBRIDGE COURT WORLD SCHOOL, JAIPUR

This team came up with the idea of Self-Shelf. It is a Smart Inventory Management System built to keep track of a person's valuable belongings. It is built into a cupboard and scans the shelf it lies in periodically for user defined objects. In case of a missing item, the device sends a message to the user to initiate a manual search and place the object in its correct place.



VISTA PEARSON SCHOOL, HYDERABAD



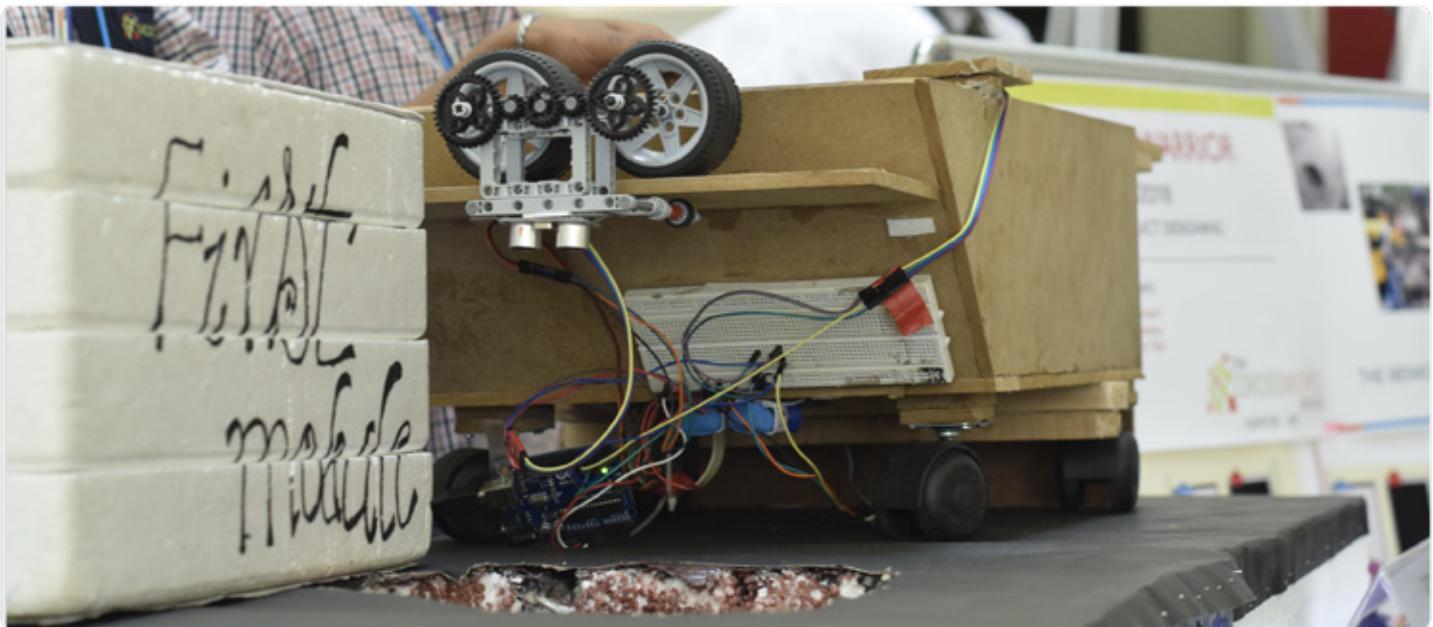
To help reduce the devastation caused due to earthquakes, this team proposed the use of the Triple Friction Bearing Pendulum Base Isolator. It is a novel seismic isolator that provides a practical solution for doubtful performance of seismic isolation systems under near-field ground motions. It is one of the most advanced ways of protecting a building against earthquake. Being better than its counterparts because of its low construction and bearing costs, the implementation of the triple pendulum isolator can help us save lives, resources and money.

SILVER OAKS
INTERNATIONAL...
SCHOOL,
VISHAKHAPATNAM



TARAPORE SCHOOL, JAMSHEDPUR

The students came up with an effective solution to reduce the problems faced in our country due to improper waste management. Their Smart waste management system makes garbage collection more efficient, and the use of solar panels reduces energy consumption. By reducing the manpower required to handle garbage collection, and given that it is aligned with the 'Smart City' and 'Digital India' projects undertaken by our country, this project surely is one for the future.



THE CROSSWORD SCHOOL, GUNTUR

Team Pothole Warriors from Andhra Pradesh came up with an alternative that would quickly and efficiently fill potholes, which is currently a very cumbersome process requiring manual labour. This portable and easy-to-use model helps in saving the roads and increases their durability.



ST.JOSEPHS' COLLEGE, KOLKATA

Owing to the high rates of burglary in houses without an effective security system in place, this team came up with an Intruder Alarm System that is both cost effective and proves to be a potent bodyguard in itself. By raising an alarm and providing information about intrusions through an SMS, this user friendly product is highly accurate and requires low power consumption, making it a viable market product.



The Peltier jacket proposed by this team solves the problem of extreme climatic effect on people due to global warming. This jacket achieves the objective of making its user comfortable in an eco-friendly way by reducing the release of CFCs, thereby reducing the depletion of the ozone layer and making the jacket environment-friendly. Most importantly, the cost of this jacket is just a fraction of what people pay for an air conditioner.

THE HERITAGE SCHOOL, KOLKATA

Team Technobit from Vivekananda Mission School, Kolkata proposed a new automatic braking system that could possibly save a lot of lives and significantly reduce the property damage caused by an accident. Their project, the Retrofittable Auto Braking System(R-ABS), tends to assist the driver in case of any error by automatically applying the brakes after doing the necessary calculations so that accidents can be averted. A cost effective and low maintenance solution, with both auditory and visual early warning features in place, this project has immense potential for the future.



VIVEKANANDA MISSION SCHOOL, KOLKATA



This team developed a model named Nero Nettoyer, which is a trash interceptor. A water-wheel vessel, it removes trash from the water bodies. It is made from materials of everyday use, such as plastic bottles, coconut husk and nets, thus keeping its manufacturing cost low. With hydroelectric and solar power being used to power the robot, the environmental risks we face can be greatly reduced if this model is put to use in the future.

ZEE SCHOOL, TRICHY (TEAM 1)

What could be better than having an eco-friendly remote controlled robot clean your surroundings. This is exactly what this team came up with. With a pumping motor and sponge in place to clean the floor along with a sprinkler to splash water, this robot is the ideal solution for our lazy generation.



ZEE SCHOOL, TRICHY (TEAM 2)

AN EXPERIENCE OF A LIFETIME



I accompanied Manveer Singh and Parineeti Bhura of our school to YIP. The team was awarded the first prize for their project on the anti-pollution mask that is herbal, homemade and reusable. IIT Kharagpur always motivates students to do something good and new for the welfare of the society and our environment. The hospitality and arrangement for the participants were perfect. The event was all about team work. We are really thankful to the organizers for changing the way of thinking and developing a scientific attitude in our students. Thank you for becoming our inspiration!

Neelam Dwivedi, Teacher
Kaanger Valley Academy, Raipur

It was a gruelling 18-hour journey from Guntur to Kharagpur by train. But the moment we entered the IIT Kharagpur campus, our exhaustion got wiped off by the fresh air, green ambience and the sight of the bright faces of students riding bicycles. We woke up to a shiny winter morning on October 26. After breakfast, our team assembled the pothole filling machine and tested the output from the sensors. Then we set off to go around and check on others. There were many interesting projects on IoT, Biology, Product Designing etc. I couldn't stop wondering how much this programme had inspired students to think beyond their textbooks and come up with such advanced working models.

My students were unusually silent on the day of the finals. They picked up courage as the presentations of the teams began on October 28 at 10 am. As our turn came, students delivered their part well and tried to answer the judges' questions as much as they could. Having done our part, we relaxed and waited for the result. It came as a pleasant surprise when our team was declared the first runner-up. We feel the YIP is a great level field for students from all corners of the country. We took back with us the ideas brought in by the other teams, inputs provided by the IIT professors and the excellent attitude exhibited by the undergraduate students. In other words, our students and I returned with our perspective 'reoriented'.

Kesava Reddy MC,
Teacher
The Crossword School, Guntur



The Young Innovator's Programme was one of the greatest experiences ever. I never thought while registering for YIP that this journey would take us this far. We arrived at IIT Kharagpur late in the evening on October 25. No sooner did we arrive than volunteers came to help us. The students were very friendly and helpful. Their behaviour actually taught us a lot.

We set out for the Nalanda complex the next morning and soon set up our model. Various people visited our desk. Some appreciated us, some pointed to our project's weaknesses. But all of this helped us to think about the challenges and the ways they could be solved further. The participants also visited each other's projects. We were just amazed to see the kind of ideas that they had come up with. Each and every team there was capable of winning the cup. It was a neck-to-neck competition. All the teams had brought out solutions to problems in our everyday lives that we often ignore. It was wonderful interacting with them.

IIT Kharagpur has an incredible campus. We were taken to the Hijli Jail as part of our visit. We also saw the iconic old tower which has IIT written on it and visited the museums. It was like we were visualizing chapters from our history books. The Nehru museum was a fascinating and fun place. All the burden of our science books was taken off our shoulders.

It was the happiest moment of my life when we heard our school name announced as the 2nd runner-up. I thank each and every person associated with this project. I hope I get a chance to visit IIT Kharagpur again. My visit made me correct my misconceptions about IIT. I thought that it was a place where people only study, but this is not so. We got to learn the essence of humility seeing the students there.

Sudipa Bhattacharjee,
Team Accelerated Innovation
Tarapore School, Jamshedpur



Sometime in August, 2018, when our principal announced the YIP competition, I had received the news indifferently. Coming back to class I realised that it was not impossible to participate in. I spoke to my friends and then decided to give it a try. I approached my teacher, my classmates and of course, my family. And thus began the preparation for the competition.

We spent sleepless nights, buried ourselves in books, articles, journals and also the internet. The first step brought success and took us to the next step. Fortunately, even the second round brought us huge success, and now our team was amongst the top 24 teams. Our project was a team work. Various skilled persons had come forward voluntarily to help us.

At IIT Kharagpur, friends were made and knowledge shared. At Nalanda complex, we were faced with a volley of questions from IIT students, professors, media persons and others. It was indeed difficult and a challenging task to satisfy all the queries. But ultimately I felt that they were not actually testing us, but sharing their views.

After the presentation in the final round, the moment arrived when finally our efforts were going to be crowned. There was not one competitor in the bus heading back to the Netaji auditorium (after a wonderful campus tour) who did not think of what lay ahead. Would we face applause or have to contend with a "Better luck next time"? But the suspense was soon over and my team mate and I rushed to the dais as soon as we were declared the 2nd runner up. We had emerged winners, making our school, our parents and ourselves proud.

Aditi Sahay,
Team Accelerated Innovation
Tarapore School, Jamshedpur

JUDGES' PANEL



Prof. Chirag Kalekar
Dept. of Mechanical
Engineering



Prof. Debdoott Sheet,
Dept. of Electrical
Engineering



Prof. Debarati Sen,
Dept. of Electronics and
Electrical Communication
Engineering



Prof. Gayatri Mukherjee,
School of Medical Science
and Technology



Prof. Brajesh Dubey,
Dept. of Civil
Engineering



Prof. Aditya Bandyopadhyay,
Dept. of Mechanical
Engineering



Prof. Plaban Bhowmick,
Centre For Educational
Technology



Anand Surelia,
Entrepreneur, Alumnus,
Dept. of Computer Science and
Engineering, 1997

BARC TEAM

Advisors

Souvik Bhowmik



Debanjan Nayak



Rahul Goel (YIP 2017)



Manpreet Dash (YIP 2017)



Senior Coordinators

Anuj Jalan



Adityo Ghosh



Ashutosh Gupta



Prakhar Tripathi



Pratyush Mishra



Rahul Nandi



Ritik Kumar Singh



Sabyasachi Mishra



Shivam Singhal



Vaibhav Tomar



Yaswanth Mallina Chowdary

Overall Coordinators

Aman Verma



Simran Garg



Piyush Nanda



Vaibhav Agarwal



Swadha Gupta



General Secretary

Aman Yadav



Shashank Mishra



EDITORIAL TEAM

Bhaskar Basak

Bhavya Kumar

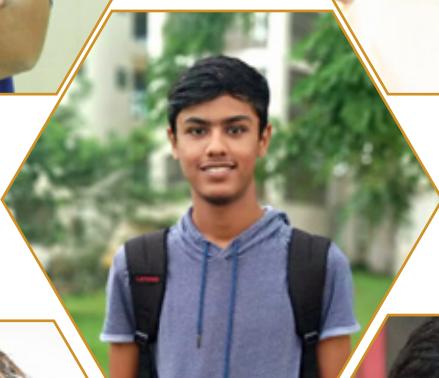


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Rahul Kumar



Yashwant Rapeti



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Bipul Das
B.Tech.
Manufacturing Science
and Engineering
[2005]

MEDIA REPORTS

Abhyuday
29th October 2018

Anandabazar patrika
29th October 2018

IIIT, KGP invites student researchers

Ranchi: Creating a platform to put forth their innovative and creative ideas, Indian Institute of Technology (IIIT) Ranchi has invited students from different schools of the country, from standard V-XI to participate in the second edition of their Young Innovation Program (YIP).

Young Innovators' Programme is one of the major initiatives being organised by IIIT Kharagpur. Its main aim is to develop every student's interest towards research, right from a young age and help students realize that they can relate real life problems. YIP will not only develop students' interest towards research, but also bears the opportunity to visit IIIT KHARAGPUR. The winners will get assistance from IIIT KHARAGPUR to develop their ideas.

The programme is organized in two different phases, the first phase being the project due submission.

The Pioneer
June 17, 2018

Prabhat Khabar
29th October 2018

Ganashakti
29th Oct 2018

Medinipur Times
29th October 2018

Ganashakti
29th Oct 2018

युवा नवप्रवर्तनक कार्यक्रमः यह नवप्रवर्तन करने का समय है



खड़गपुर। भवित्व की भवित्ववाणी करने का सबसे अच्छा तरीका है कि इसे इस विचारधारा को व्याप में रखें, आईआईटी खड़गपुर सालालिक ने उन जीव समस्याओं के लिए अभिनव समाधान खोजने के लिए युवा दिमाग को आमंत्रित करता है। आईआईटी खड़गपुर युवा अभिनव कार्यक्रम (आईआईटी) के अंतर्गत यादा नायावाच, अनुवाचन और शास्त्रीय उदाहरण के उत्तरांश को अग्रणी बढ़ावा देता है ताकि 8 वीं से 10 वीं कक्षों के छात्रों को अपने अभिनव विचारों को प्रस्तुत करने और अनुसंधान के क्षेत्र में रुचि विकसित करने के लिए एक अच्छा मौका याद रखें।

यह कानूनक्रम विज्ञान और प्रौद्योगिकी में प्रतिभावना और रुचि के साथ छात्रों को पढ़ावान करने के लिए एक मंच होगा, उनके सम्बन्धों पर विचार करने और काम की तरफ़ी की उनकी व्याख्यानकारी क्षमता को विकसन करने के मद्देनज़र मिलेगी। यह चर्चणत छात्रों को आईआईटी-स्टूडीज़ इंजीनियरिंग के अल्टीमेट अकादमिक और सामाजिक विश्वास के लिए जानने का अवसरा और सामाजिक विश्वास के लिए जानने का अवसरा और सामाजिक विश्वास के लिए जानने का अवसरा और सामाजिक विश्वास के लिए जानने का अवसरा।

Eenadu
29th October 2018

Dinamani
29th October, 2018

Medinipur Times
29th October 2018

Patrons



Prof. Baidurya Bhattacharya
Dean, International Relations
IIT Kharagpur



Prof. Anandaroop Bhattacharya
Associate Dean, International Relations
IIT Kharagpur

Event Planning & Management



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Chandana Chakraborty



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Publication



Chirosree Basu
(Editorial)



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(Design)



Without change there is no innovation, creativity, or incentive for improvement. Those who initiate change will have a better opportunity to manage the change that is inevitable.

~William Pollard

The background features a large, stylized graphic element on the left side. It consists of several overlapping curved bands in warm colors: yellow, orange, and red. These curves are layered and curve upwards from the bottom left towards the top right, creating a sense of motion and depth.

Young
Innovators'
Program