

A technical marvel

A Robotic Solution To Remove Trash From Rivers

Pro@Project

Stuti Kalra, GT Network

Our rivers have always symbolised purity and life, but many of these precious water bodies are now struggling to survive due to uncontrolled pollution. **Adhiraj Kumar Chauhan, a student of Class XI E at Amity International School, Pushp Vihar,** is determined to tackle this pressing issue by developing the Unmanned Marine Vehicle, a robotic solution designed to remove surface-level trash from rivers. Let's find out more.

Inspired solution

The idea for the project came to Adhiraj when he visited the Narmada River, where he was struck by the extent of pollution. His research revealed that many of India's rivers face similar challenges. He believes that rivers are among India's natural treasures, and that it's important to keep them clean.

Based on science

Equipped with cameras and sensors, the robot detects trash and collects it using a robotic shovel. The collected waste is then de-



Unmanned Marine Vehicle

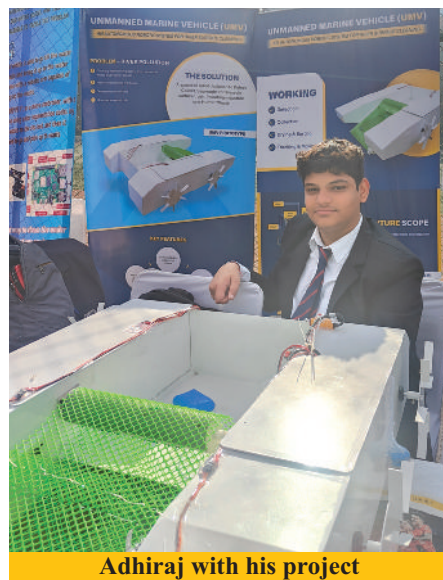
posited into rotating drums, where centrifugal force dries it up before transferring it onto a conveyor belt for separation into metals and non-metals. Additionally, the robot releases chemicals to purify the water.

Idea into reality

Adhiraj began working on his project on September 22, 2022. Initially, he spent some time refining his concept and developing digital prototypes. As his idea started to take a definite shape, he participated in various competitions to raise awareness for his innovative project. This led to the creation of a functional prototype.

Tackling challenges

One of the main challenges came during the initial phase, when Adhiraj struggled to come up with a realistic yet forward-think-



Adhiraj with his project

ing idea. To overcome this, he made a list of major environmental problems he wanted to address and then narrowed them down until he found the one, he wanted to work upon. Then, during the prototyping stage, he had to create multiple digital prototypes and refine them until he arrived at an effective and cost-efficient version.

Winning accolades

Adhiraj's project has already been submitted

Addressing UN SDGs

- **SDG 6 (Clean Water and Sanitation):** By removing trash along with the release of purifying chemicals to clean the dirty water, this project ensures improved water quality by reducing pollution.
- **SDG 14 (Life below water):** With an aim to conserve and sustainably use the oceans, seas and marine resources for sustainable development, the project will minimise the threat of pollutants for marine animals.

for copyright, and once the final version is completed, it will be submitted for a patent. It has also been presented at several platforms and has won awards, including Vasudha (2nd prize) 2023; Hackathon (3rd prize) 2023; S20 conference 2023; MIT professor Interaction 2023; Hungarian Ambassador visit project presentation 2023; ATL community days- 2022/2023.

Support system

Adhiraj credits his school for supporting him throughout the project, offering platforms to develop it, and assisting him in enrolling in competitions. The school's support in sourcing materials and facilitating research contributed to the success of his prototype.

The road ahead

Currently, Adhiraj is in discussions with government agencies to secure funding for scaling up his invention into a full-fledged operational model. His goal is to clean India's rivers and make a lasting impact. **GT**

Shameer Zaman, GT Network

Sound is an extremely potent form of energy. From cracking jokes with friends to enjoying rock concerts, we hear and use it everywhere. But sometimes, it can shake the ground, break glass, and even damage your body! Here are some of the loudest sounds ever recorded:

Crowd at an NBA game: 115 dB

In the year 2011, fans of the Dallas Mavericks witnessed a near-impossible win and got so loud that their cheering reached 115 decibels, which is exactly the point where sound becomes painful for human ears.

Lesser Bulldog Bats: 137 dB

These bats from Central and South America scream really loud — 137 decibels — and you would think your ears would hurt. But don't worry: their shrieks are ultrasonic, which means it is beyond the hearing range of humans.

Howler Monkeys: 140 dB

One of the loudest land animals, howler monkeys can be heard from 3 miles away. Their deep, echoing voices reach 140 decibels. All thanks to the special hyoid bones in their throats.

Louder than life

Loudest Sounds Ever Recorded On Earth



Gunfire: 140–190 dB

A single gunshot can reach up to 190 decibels. That is loud enough to instantly damage your hearing and cause permanent hearing loss or at least make our ears ring. That's why proper ear protection is a must around firearms.

Saturn V Rocket: 204 dB

The rocket that sent astronauts to the Moon was not only huge, but incredibly loud as well. The ruckus got so bad that NASA had to blast water onto the launch pad just to stop the sound waves from destroying everything nearby.

Chelyabinsk Meteor: 180 dB

In 2013, this meteor exploded over Russia with a force 500 times bigger than the Hiroshima bomb. It even broke windows and injured over 1,000 people. It was heard and felt 9,000 miles away. Videos of this meteor can be found all over the internet!

Tunguska Meteor: 197 dB

This meteor flattened 600 square miles of forest in Siberia in 1908 and was heard as far away as England. Scientists say it may have reached 197 decibels, making it one of Earth's loudest space booms.

Krakatoa Volcano: Up to 202 dB

It was 1893, when this explosion took place. And it was loud enough to be heard 3,000 miles away! It destroyed most of the island, caused massive tsunamis, and killed over 36,000 people. Believe it or not, some call it the loudest sound in recorded history.

Did you know?

Anything near or above 194 decibels starts pushing air molecules apart, turning sound into pure force! The takeaway? Always keep a pair of earplugs handy. You never know when the next boom might come your way.