

## 'Smart Water' emerges winner

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The prototype called Smart Water, bagged the top prize at the first-ever 'iDeate - The Great Digital India Challenge' organized by Cisco in Bengaluru.

The feat was achieved in the face of stiff competition from 40 other Indian universities, including IITs and IIITs.

The winning team, which got a cash prize of Rs 2.5 lakhs, included Mr Akshay Balachandran, Mr Surya Murugaian, Mr Parthasarathy R, and Mr Murali Siva, all third-year students of Amrita School of Engineering at Amrita University.

Teams from IIT Kharagpur and IIIT Bangalore bagged the 2nd and 3rd prize, respectively.

Large water bodies like lakes, ponds and dams are regularly monitored worldwide and their water quality analyzed to keep a tab on water exploitation and pollution.

Existing manual-sampling techniques consume a significant amount of time and resources, and are prone to inaccuracies in data collection.

To rectify these defects of the traditional sampling method, remote sensing technology was introduced, but the accuracy of data obtained is completely dependent on the number of nodes installed.

In recent years, advancements in data analysis, machine learning, Internet of Things (IoT) and autonomous boats have made it possible for water quality to be monitored without implementing the sensor nodes.

Explained Dr Sasangan Ramanathan, Dean, Amrita School of Engineering, Amrita University: "Our students have proposed a novel technique to collect various parameters of water such as the pH level, dissolved oxygen, temperature, and conductivity

only from a limited number of locations across a water body.

"The data collected from these is used to generate a hypothesis function through machine learning that can accurately predict the parameter values at all other locations. Our students have also framed a technique that can predict the quality state of a water body a month or even a year in advance, so that necessary measures can be taken pre-emptively to save them from over-exploitation. This novel technique to measure and predict the quality of water is the first of its kind in the world."

The prototype was successfully tested by students across water bodies of all sizes, from swimming pools to lakes.

Added Dr Sasangan Ramanathan: "The students' Smart Water project is on its way to becoming a start-up. We have received interest from many companies such as Cisco for taking the prototype forward towards commercialization. The Amrita Technology Business Incubator (TBI) is also in talks with our department.

"A decision about launching the start-up will be taken soon. Hopefully, in a few years, this technology developed by Amrita students will be adopted worldwide and make a real difference in saving fresh water bodies from over-exploitation. I congratulate our students and faculty for such a stupendous feat."

Said Mr Surya Murugaian, the student who was the leader of the team: "As budding engineers, we wanted to invent something for a more sustainability world. So we formed a team called Circuit Breakers and started working day and night for more than a year to come up with Smart Water."

Cisco's event was focused on Internet of Things (IoT) based ideation challenge for India.

Hundreds of students from 40 of India's top universities took part.

Eight teams were chosen as semi-finalists, out of which three were declared the winners.

The teams worked with Cisco mentors to build working prototypes of their ideas.