YET another platform that emerged recently is Toru - the idea tree, a think tank and a ground for innovation and creativity. Earlier this month, Toru organised a 5-day long workshop, where 21 young people were encouraged to innovate and create social change for the better. The workshops conducted by Nazmus Saquib, a graduate student at MIT Media Lab. The innovations were finally exhibited at the city's EMK centre, where many attended and were left amazed at the ideas. Social problems can be solved by creating a platform for entrepreneurship to thrive, according to Saif Kamal, the founder of Toru. "Innovation is the key here," he says.

Check out the some of the brilliant ideas showcased by the future scientists, computer experts and innovators that Saif and his team have brought together.

THE ARGUS *Helmet*

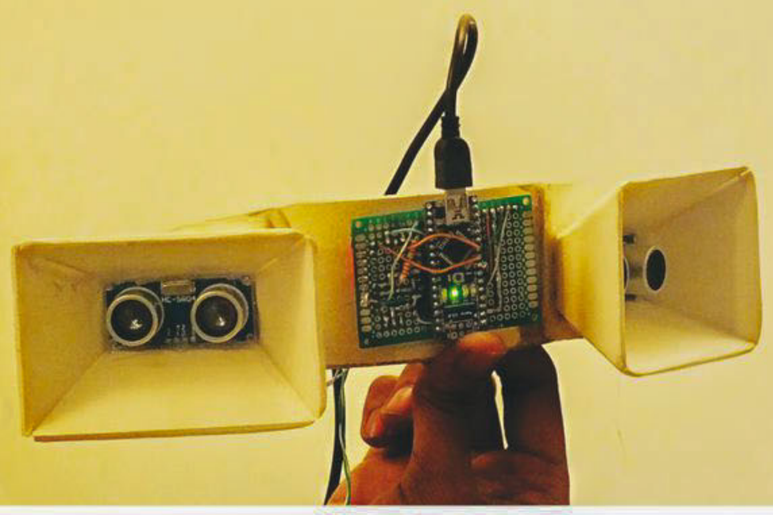
NAZIBA BASHER

Argus is a third eye, invented by Samiul Haque, Istiak Ahmed Inam and Mainul Hasan Alin. It is made to send tactile feedback through vibration motors to the user if there is any vehicle approaching him. "We tried to 3d depth map the rear of a cyclist using a gyroscope and a Sonar distance finder," says Haque.

The inventors have made a working version of the design and displayed it successfully at the Digital World 2015. Currently, they are working with Mozammel Hoque from BDCyclists to turn it into a piece of gaming gear. "Road Safety for cyclists was our primary motivation for this project. One common problem for cyclists is that they get into accidents, when they try to look behind when taking turns," says Samiul, "I am still looking for better and efficient ways of making smart cycling gears and wearable devices."

Their motive is to help the cyclists of Bangladesh, who are looking for cheaper yet efficient smart cycling gear. The Argus helmet was an innovative approach to solve the problem regarding traffic collisions, which is usually done using expensive LiDAR sensors. "We brought down the cost to a fraction of a single LiDAR sensor," he says. "We made sure it was feasible enough and could be done under a budget," says Samiul. The total cost of the device was about 2,000 BDT which is roughly the cost of a new bicycle helmet.

"Media Lab has given me the very thing I was looking for while working in electronics and robotics, which was a structure. Our development process involves looking at the parts available in the Market and then thinking about what we can do with them," he says. Samiul dreams of working for a community of makers and thinkers whose purpose in life is to create beautiful things, not for fame or glory, but because they can.



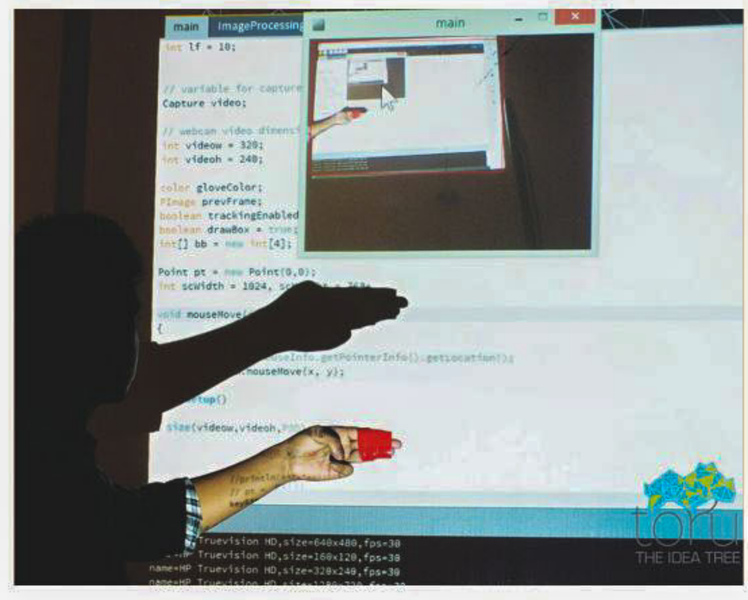
Office solution *for* PRESENTATIONS

APURBA JAHANGIR

One of the projects which received much admiration at The Makers Lab was the 'Interactive Office Solution for Presentation' by engineers Afifa Tahira and Halima Akhter. Credited as one of the most popular inventions by the audience at the event, these young individuals have already proved themselves competent inventors.

The aim of their invention was to make office presentations easier, livelier and more interactive. "As we live in the age of science, we thought it was high time we move forward from power points," says Halima Akhter. The invention makes it possible to move the objects in a presentation using hand gestures. Based on augmented reality, the invention uses computer vision to make the presentations interactive. "Using this tool, we can drag and drop objects in the presentation, as we see in sci-fi movies," says Afifa Tahira. This tool is programmed in processing language and only requires a camera and a projector. The engineers used a pocket projector to make the device portable. A glove with some red tape wrapped around the index finger was used to move the objects in the projection.

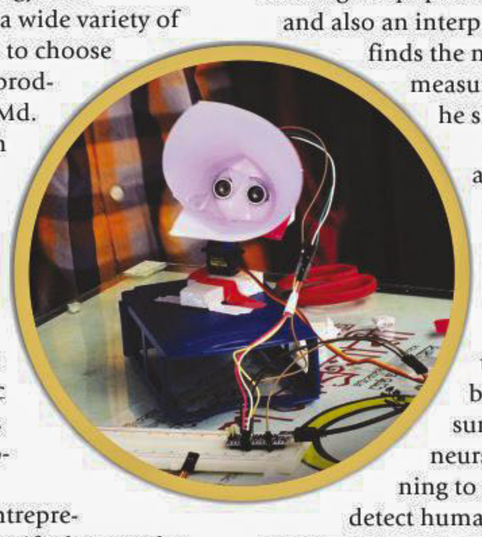
The projects developed in Makers Lab proved to be one of the best innovation events in the city. Though they were all prototypes, they all had a lot of potential. "In the improved version, we can make the objects dynamic and more user interactions can be added. It can be modified to be used as an extension of the traditional presentation tool MS Powerpoint. Alternatively, independent new software like MS Powerpoint can be developed based on this invention," says Halima Akhter.



PRODUCT POPULARITY EVALUATOR

ANIKA HOSSAIN

In today's world of modern technology and globalisation, consumers deal with a wide variety of brands selling very similar products to choose from. To determine which of these products are more popular than others, Md. Rakin Sarder Arko has come up with an invention that records the activity around a product in supermarkets, without violating the privacy of the customers and at the same time, helping entrepreneurs understand their preferences.



The system is developed with the simplest components--an ultrasonic distance sensor, a mini servo motor, an Arduino microprocessor and processing programming language. "It becomes a great challenge for the entrepreneurs and the shop managers to identify the popular products," says Arko, "This identification helps them make decisions regarding future supplies of the products," he explains. "To solve this challenge I have developed a small, cheap, yet effective system of detecting and tracking the popular products, with a live update feed and also an interpreter which at the end of the day, finds the most popular product based on a measuring scale of customers activities," he shares.

This mechanism can also be used in art galleries, showrooms, security systems etc. "The current version of the project is the first of its kind and is a prototype for three products only," he says. "I am currently looking for field implementation of this prototype, completing the benchmarking of the project and surveying the reactions of the entrepreneurs," he continues. "Also, I am planning to add IR sensors which will be able to detect humans instantly, and more functionality like live data feed, smart phone controlling etc. Apart from that, I am planning to design a complete system for mega shops for all their products."

> *"I am currently looking for field implementation of this prototype, completing the benchmarking of the project and surveying the reactions of the entrepreneurs"*

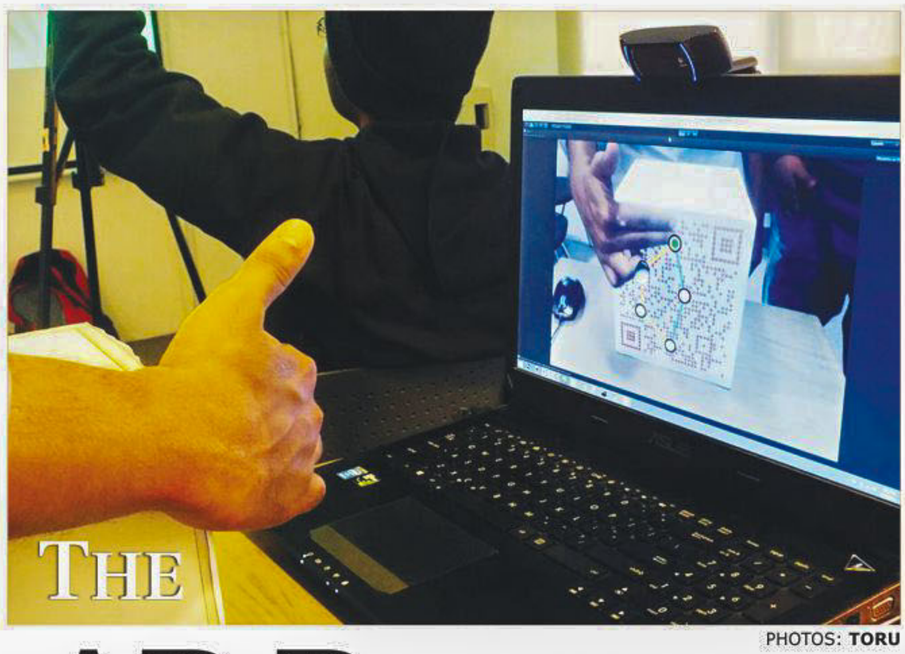
THE INTERACTIVE CLASSROOM BOARD

ANIKA HOSSAIN

Among the impressive inventions that emerged from The Maker's Lab, was the Immersive Augmented Education system, by Akkas Uddin Haque. Haque is a Software Engineer who came up with an interactive classroom board that can essentially detect hand movements (sometimes to create 3D images) and can be used by teachers to interact with students in a more interesting manner.

"I had attended the workshop conducted by Nazmus Saquib of MIT Media Lab," says Haque when asked how he came up with the idea. "I believe that Augmented Reality could help us in many ways. Students will be more interested in study material if they are more engaging. Augmented Reality is bound to make a lasting impression, as students will be able to physically see the effects of manipulating/interacting with the material they want to study. In developed countries, they actually conduct experiments in the class to make the classes more interesting. This is why I believe this project has very strong implications in our country where actual physical setups would be very expensive and time consuming," he says.

In the future, Haque wishes to build a simple system that would be easy to set up with minimal hardware requirements and minimal cost, preferably with just a camera, a projector and a computer, thus enabling the use of this system in every school in our country.



PHOTOS: TORU

AR Box

APURBA JAHANGIR

As a prototype, 'The reward based academic games through applied knowledge' or The Air Box gave the audience of The Makers Lab a fun invention to try out. Developed by prominent individuals Aurko Roy, Rafid Wahid and Fahmida Afrin Synthia, the project became much appreciated at the Makers Lab.

The sole purpose of the invention was to solve text book problems in an entertaining way. "Our main idea was to design the puzzle in such a way, that students have to work with eachother to figure out the solution. This way, they will be solving the same problems they faced difficulty with in class, but in a more enjoyable and cooperative fashion," says Aurko Roy. The invention was designed as a puzzle and a micro controller (Aurdino) was used to control the interface. "These puzzles were customised and made suitable for different age groups. If player(s) can solve all the puzzles, then the box will unlock itself and present a reward to the player," says Roy.

Though it was a prototype, the AR Box showed enormous potential at the event. "We wish to take the project to different schools where they don't have access to many multimedia contents. As our current system plan only requires a few components, we can easily travel with it. We wish to make education fun experience rather than being a mundane and repetitive task," says Arko