BRAIN CONTROLLED WHEELCHAIR

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Conception & Purpose: There are nearly 7 billion people in our world as in, out of which there are a considerably large number of people who has at least one affliction. One of the most distressing one that anybody can have is paralysis of body parts. Paralysis can make the affected to seriously depend on others even for activities of living. This problem of disabled persons has really motivated us to do the project. This project intends to unfold a solution for this problem.

This wheelchair is designed using **BCI** technique so that a person with any extent of disability can operate the wheelchair to attain self-independence at least in activities of daily life.

The objective of the project is to develop a **smart wheelchair**, using a brain control technique by means of harnessing EEG signals, generated due to particular thoughts in a person, to provide a possibility of easy movement for such physically challenged persons.

This project includes an Electroencephalogram (EEG) based, a non invasive brain-control interface (BCI) which will control the movement of the wheelchair towards right, left, or forward motion.

Journey: We started work on this project in June and first made the low cost wheelchair. By the time we were done with the chair we started our work on the brain waves this was a bit difficult at first understanding all the medical terms related to the brainwaves, but got used to it. Simultaneously we had also started learning the coding part which was done on a software called LabVIEW.

Challenges: We had some glitches in the software part which we got rid of in the due course by making constant changes to our code. The next big thing was to actually make the wheelchair move by the brain waves.
We did the sensor interfacing to our code and connected all the circuitry required to move the wheelchair and after a week of hard work VOILA the wheelchair was actually moving just by the brain waves.

To end with this project has given us a good exposure and opportunity to learn many new things. We plan to make a finished product to be launched in the market which will be helpful for the people very soon.

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Achievements: This project has been showcased at various events across India

1. Google Developer Group Event Mumbai

2. Maker Fest , Ahemadabad

3 .Bhartiya Vigyan Sammelan 2015 Goa

4. GMRT Pune.

5.Also the Story was covered in The Sandesh Newspaper (local newspaper in Ahmedabad) [11th Jan 2015] and given a title of **Most innovative Project**

બ્રેઇન કંટ્રોલ વ્હિલચેર

વિદ્યાવિહાર મુંબઇના સ્ટુડન્ટ્સ સોહમ ગણાત્રા, સની મોદી, પ્રિયાંક સત્રા દ્વારા પોતાના માઇન્ડથી કંટ્રોલ કરી શકાય તેવી બ્રેઇન કંટ્રોલ વ્હિલચેર તૈયાર કરવામાં આવી છે.

6. The Story was covered in the Hindustan Times , Mumbai [4th March 2015] Newspaper giving the title

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Out of the box

CREATIVE STREAK A blink-control wheelchair, an automated Braille pad, a crowd control system – students are undertaking innovative projects as they attempt to solve everyday problems and bulk up their CVs

The Brainy Chair, created by electrical engineering students (above) Priyank Satra, 22, Soham Ganatra, 21 and Sunny Modi, 21.

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This placement season was not a smooth ride for Shashank Agarwal, 21, a final-year engineering student at Thakur College of Engineering and Technology, Kandivli. Whether it was with respect to certificates or resumes, it was an uphill task to keep all his documents in place and be composed for the interview.

"Looking around, I realised that I was not alone. Many of my batchmates too were struggling with their files and papers."

That's when Agarwal thought of creating a digital platform that could store all a student's information and be accessible to employers as well.

Once the data is uploaded on this platform, called Application for Placement and Training, employers can access them all at one place and they in turn can update the schedule for interviews and online training sessions. The students can then view all the information here, instead of waiting to get an email from the employer each time there is an update.

"We took this up as our final-year project and we want to turn it into a successful venture in the future," says Agarwal.

Like Agarwal, many final-year students from city colleges are working to provide solutions to everyday problems in their year-end projects. What's more, while these projects would earlier remain on paper, experts say students are now treating them to bulk up their resumes and bag employment opportunities based on their bright ideas.

"Projects are no longer a cut-copy-paste task," says Ashok Wadia, principal of Jai Hind College. "Students are thinking out of the box to gain an edge over other students. Employers are also keeping an eye on final year projects and students faring well either get financed or get internship opportunities."

As students prepare to present their final-year projects, we look at some of the most useful and innovative.

BRAINY CHAIR

Gone are the days when a physically disabled person needed to be moved around in a wheelchair or use a remote control. Three electronical engineering students from KJ Somaiya College of Engineering in Vidyavihar — Soham Ganatra, 21, Sunny Modi, 21, and Priyank Satra, 22 — have conceptualised a chair that can be moved with the blink of an eye. They have named it the Brainy Chair.

"There will be a censor band tied around the head of the user," says Ganatra. "As the person blinks in the direction of desired movement, the censor catches the signal and the chair moves in that direction." If the person wants to halt, they need to only blink thrice.

The system uses eye movements and brain waves, allowing the user to move around independently. The censor band reads the mind waves and transmits the data to the software, directing the chair's movements.

"This project aims to empower a section of society that is still largely marginalised," says associate professor and project mentor Lekha Das. "One of the major positives of this project is that the chair is cost-effective and affordable."

The prototype prepared by the students costs around Rs 30,000 and the students are working to reduce it further. A remote-controlled electric wheelchair costs about Rs 2 lakh in the market.

"The knowledge that we gained from our subjects helped us build the prototype and will be one of the major highlights on our resumes when we go out for interviews," says Satra.

ELECTRONIC BRAILLE PAD

Six students of electrical engineering from Veermata Jijabai Technological Institute, Matunga, zeroed in on a technology device for their final-year project that could help the blind — an electronic Braille pad.

"The Braille pad can be used by anybody who knows Braille or wants to learn it," says Kush Goliya, 20. "Just like a Braille book, the device has pricks that the user can feel on their palm, but the USP of the product is its audio and storage capability."

Goliya adds that the user can hear the alphabets that they touch and make notes of the same. The notes will then be saved in the memory of the device and the user can revisit them whenever they want to revise or review the content.

Experts say such projects help develop the overall personality of the student. "These projects help students develop skills such as communication, research, leadership and team

STILL UNDECIDED? A WINNING FINAL-

Experts offer suggestions on how to choose a project, execute it with the resources available and come up with a working model.

- To find a viable idea, students should form a group and brainstorm on theories that are taught in class.
- Students should refer to standard journals for their research since they carry the most recent academic papers. One can also look up for reliable websites on the internet at this stage.
- The trial and error method, while executing a project,

TIPS COURTESY PRITAM SALAN ELECTRONICS, KJ SOMAIYA COLLEGE ASSISTANT PROFESSOR IN THE E

Future Scope: To build it as a product and commercialize the very first low cost Brain Controlled Wheel Chair.