

INDIA'S STUDENT PROECT SHOWCASE 2018





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INDIAN STUDENTS' PROJECT SHOWCASE

This book features creative works by some of the most promising and talented student designers from across India. Created with industry-leading Autodesk software, these designs best demonstrate the "Future of Making Things".

STUDENT PROJECTS

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FUTURISTIC BIKE EXPLORER

Selected as the winning entry of Honda Design Competition held in Bangkok, Thailand, the "Futuristic Bike Explorer" was conceived by Mayank Gala. Inspired by video games and science fiction stories, the Futuristic Bike Explorer was designed with an enthusiastic adventurer in mind. Just like one who is ready to adapt and tread unchartered territories, the bike explorer is capable of changing from a bike-like vehicle to a quad-bike rover; this allows it to manoeuvre effortlessly in uneven terrains, where regular vehicles struggle to navigate.

Autodesk Fusion 360 Advantage:

It was easy to make a 3D printable protoype.





Student:Mayank GalaInstitution:DSK ISD Rubika International Campus

ELECTRIC MOTORCYCLE CATALYST

Along with his personal need to have a motorcycle, Sharath realised how pollution is drastically changing the environment. He wanted to make something that is green, smart and integrated with our everyday life. The Electric Motorcycle Catalyst stemmed from the idea of being affordable and versatile. Above all, it should be durable, green and easy to integrate into our daily lives.

Autodesk Fusion 360 Advantage:

Rapid prototyping was used to create a minimalist user interface. Cloud connectivity also made it easier to transform the design into reality.

Student:Sharath NaikInstitution:Dayananda Sagar College of Engineering

The Mars Rover Aurora is capable of working alongside astronauts on the red planet, and is expected to perform several tasks involving traversing over an uneven terrain autonomously, performing soil analysis and servicing equipment which tests the rover's mechanical and electrical capabilities. The main inspiration behind this project was to design a modular and low-cost all-terrain rover which can be applied to different fields and domains, such as defense, reconnaissance missions, search and rescue missions and more.

Autodesk Fusion 360 Advantage:

Prototype was illustrated with the use of Fusion's Computer Aided Manufacturing (CAM) capabilities and Finite Element Analysis (FEA).







MARS ROVER AURORA

Student:Team AnveshakInstitution:IIT Madras

PENSOLE FOOTWEAR

The inspiration behind the Pensole Footwear came from Automotive Design Language. A performance footwear created for motorsport application, the design would aid the future race driver in controlling the car with body-centric movements. The design of the shoes is minimalistic and resembles racing lines. The shoes can be 3D printed to fit scanned data of every individual race driver, which would prove crucial in motorsports.

Autodesk Fusion 360 Advantage:

The use of T-spline technology and organic free form modelling helped to iterate and create realistic renders and visuals.







Student:Mohammed ZijahInstitution:National Institute of Design

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SMART CHAIR

Ashwin's grandmother was facing difficulties in climbing the stairs due to old age. Witnessing this episode, Ashwin was inspired to create a product where it makes it easy for people with injuries or disabilities or disability to climb stairs. Currently, manual and electric versions of such chairs are expensive. Features of the project include a detachable computer screen with webcam, movement configurations with the help of a joystick and buttons, stair climbing configuration, stereo sound system and a cupholder.

Autodesk Fusion 360 Advantage:

The motorised wheelchair and its climbing Fusion mechanism helped with the understanding of continuous tracks. Electric integration of the joystick and other electronic consoles in one workspace also helped the team to deal with complex assembly in Fusion.



Student:R.S.Ashwin KumarInstitution:PSG College of Technology



BAMBOO BICYCLE

With the concepts of eco-friendliness and a non-motorised transportation system, the aesthetically pleasing Bamboo Bicycle is specially handcrafted with natural materials.

Autodesk Fusion 360 Advantage: Fusion 360 helped to visualise the end-product quickly, while resolving the joints and understanding how the links should be attached. The ease of modelling and sculpting techniques seen is amazing. Along with these advantages, the software helped to analyse the strength of the materials used, and give the frame a boost of stability.

Student:

CORE)

Amartya Banerjee, Bhushan Sonawane, Nikhil Balaji, Sourabh Yadav Institution: National Institute of Design

CCC DAY

INSULIN WATCH

Insulin delivery devices such as the insulin pen and syringe are currently bulky and cause pain to the user. This inspired L Muthu to find an alternative. The Insulin Watch has a biosensor that can measure the glucose level in the body through sweat. Based on the results obtained, insulin can be delivered into the bloodstream through the Insulin Watch's microneedles which are made of polymers. These microneedles can be found on the strap of the watch.

Autodesk Fusion 360 Advantage: A product of cloud collaboration. Student:L Muthu ShanmugamInstitution:PSG College of Technology



ZENITH PROSTHETIC LEG

Most prosthetic feet in the market are rigid in operation. Inspired by the movements of robots in science fiction movies, the Zenith Prosthetic Leg attempts to provide flexibility and functionality of a human leg. With its modular design and smart Electronic Control Unit (ECU), the conceived prosthetic leg is able to decide how much assistance has to be provided to the user. It can also be programmed to tackle complex terrains and conditions.

Autodesk Fusion 360 Advantage:

Stunning design created from the integration of free form and solid modelling.

Student:Jitesh JangirInstitution:Malaviya National Institute of Technology



ERGONOMIC ROCKING CHAIR

According to human ergonomics, the optimum angle for the spine to rest is 135°. Based on these studies, the students decided to design the most comfortable rocking chair. The Ergonomic Rocking Chair may be simple in terms of construction but the team was able to inject a sophisticated look into the design. The design of the supporting planks is inspired by Japanese style of carpentry with lines and spaces. Along with the lines and spaces, the smooth curves help to enhance the aesthetics of the chair. The uniqueness of the chair lies in the absence of metal fasteners. All pa are joined by simple mortise and tenon joints.

Autodesk Fusion 360 Advantage:

All metal fasteners were easily eliminated from the end-product with Fusion 360.

Student:Sharath Nairy, Swaroop T GudhalInstitution:Dayananda Sagar College of Engineering

ETRON

Change in the global automobile sector marks a definite shift in the market demand towards electric and hybrid vehicles. With this mind, Team Etron took their first step to initiate a project that could be highly relevant for the future.

By utilising a Brushless DC motor with a variable-characteristic controller, this helps to tweak the vehicle performance differently according to the situation.

The setup of Etron consists of a lithium ion battery pack, which helps to reduce a huge amount of weight; as compared to similar vehicles using lead acid batteries, the Etron is lighter and performs better.

The team was able to manufacture the fiber glass components of the go-kart based on the prototype, which takes into account the parameters of aerodynamic and mechanical advantages.



Autodesk Fusion 360 Advantage:

Fusion 360 was used to perform impact tests for the vehicle frame so as to withstand load collision and experiment rollover protection. Front, rear and side impact analyses were also done on the prototype.

Student: Team Etron **Institution:** Dayananda Sagar College of Engineering

SEEMANT



Every year, countless fishermen mistakenly cross over maritime boundaries, thus resulting in them being arrested by navies of neighbouring countries. In a few cases of mishap, fishermen were innocently killed. This boils down to the inability of fishermen to get a good grasp of their location at sea. Seemant is a smart wearable watch that helps identify international maritime boundaries and alerts fishermen beforehand of possible intrusions, which could potentially save lives.

Autodesk Fusion 360 Advantage:

Smart software collaboration and integration between Eagle and Fusion 360.

Student:Mahendra Kumar ReddyInstitution:IIT Kanpur



PHOTONAR

PhotonAR is a concept that allows anyone to experience augmented reality (AR). All it takes is to insert a phone into the headset and automatically, data is synced to the headset to provide an affordable and excellent AR experience. The PhotonAR has an array of sensors which includes four wide angle cameras, infrared (IR) cameras and depth cameras; these help the onboard computer to scan and learn the environment, as well as understand hand gestures. With the data transmitted from the inserted phone, images will be processed and displayed in PhotonAR. Designed to meet the needs of enthusiasts who want to experience augmented reality without spending too much, the device uses Unity, an open source programming language which encourages participation in application development.



HETENAR





Autodesk Fusion 360 Advantage:

Improvements could be made after uncovering weak structural points with Fusion's feature simulation. Furthermore, the program boosts cloud capabilities, an easy-to-use interface and clear placement of functions for smoother navigation.

Student:Siddh DhuriInstitution:Indian School of Design and Innovation