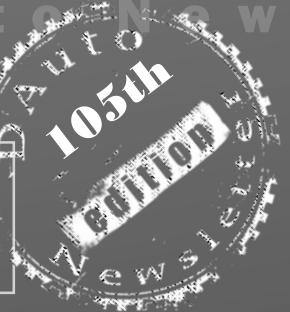


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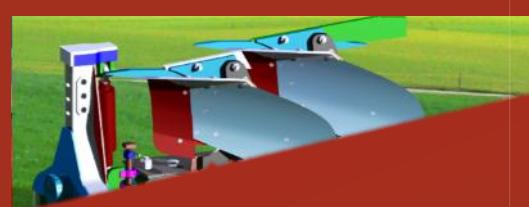
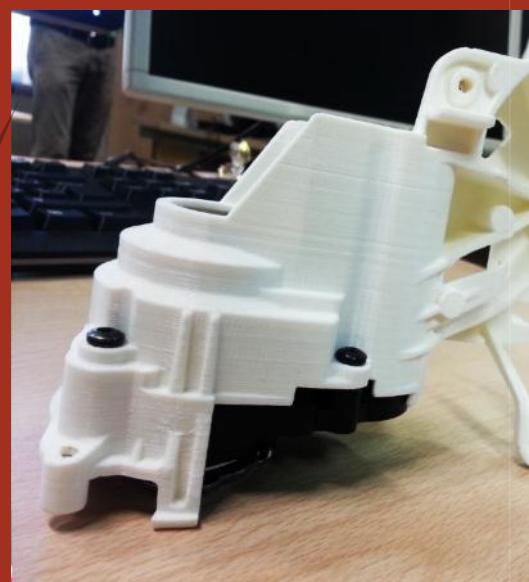
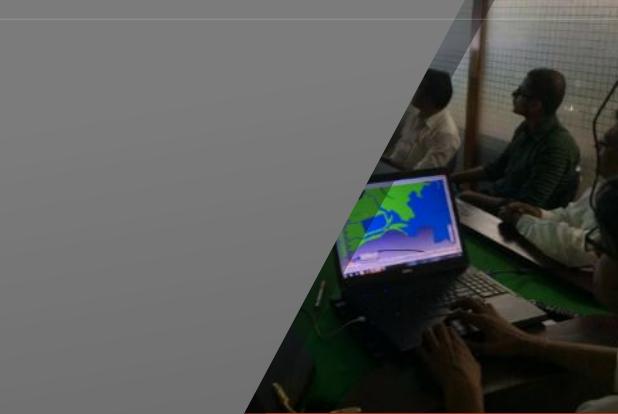


“ Design engineers turn designs into reality. Without them, a great idea but nothing more than,... well, a great idea. ”

- ✓ Sculpting Cars in Virtual Reality
- ✓ 500-year old Leaning Tower of Pisa mystery unveiled by engineers
- ✓ This portable USB charger generates energy from any type of moving water and stores it for off-grid use
- ✓ Aston Martin and Triton announce Project Neptune design completion
- ✓ Italian researchers develop lighter, cheaper robotic hand
- ✓ Researchers improve textile composite manufacturing
- ✓ Computer-controlled 'greenhouses' in kitchens grow fresher, healthier produce
- ✓ Pininfarina HK H500 Sedan Concept
- ✓ Blue Pilot project promises to push down cost of offshore wind farm installation
- ✓ Bertone Pandion Concept goes on auction

April 2018 refresh

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# Edition

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## Giugiaro Sibylla Concept



A set of new photos and images of the GFG Sibylla, the concept car designed by Giorgetto and Fabrizio Giugiaro set to be on display this weekend at the Concorso d'Eleganza Villa d'Este.

After its debut at the recent Geneva Show, the GFG Style Sibylla Concept will have its national preview at the annual event of the “Concorso d'Eleganza Villa d'Este”, the historic concourse for classic and concept cars in the amazing backdrop of the Lake of Como.

The luxury electric sedan prototype will compete May 26th and 27th along with other concepts and one-offs for the “Concorso d'Eleganza Design Award”.

2018 marks Giorgetto Giugiaro's 80th birthday. This car is a celebration of a lifetime dedicated to iconic automotive design, a luxury, electric, 4-door, 4-seater saloon prototype developed in collaboration with Envision, the leading Chinese company in the intelligent management of energy.

**The setting and style of these photos recalls the images of many iconic Italian dream cars from the past**

The Sibylla incorporates innovative solutions in terms of accessibility, functionality, and aesthetics. It revisits classic themes; it is elegant, with generous dimensions (over 5 meters long and 1.48 meters high) but at the same time sporty.

The choice of electric propulsion has improved the interior space and allowed Giorgetto and Fabrizio Giugiaro to revolutionize accessibility and exploit this space by introducing rational, functional and ergonomic solutions both inside and outside the vehicle.



# Edition

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## Mit Graduates Create World's First 'Robotic Kitchen'



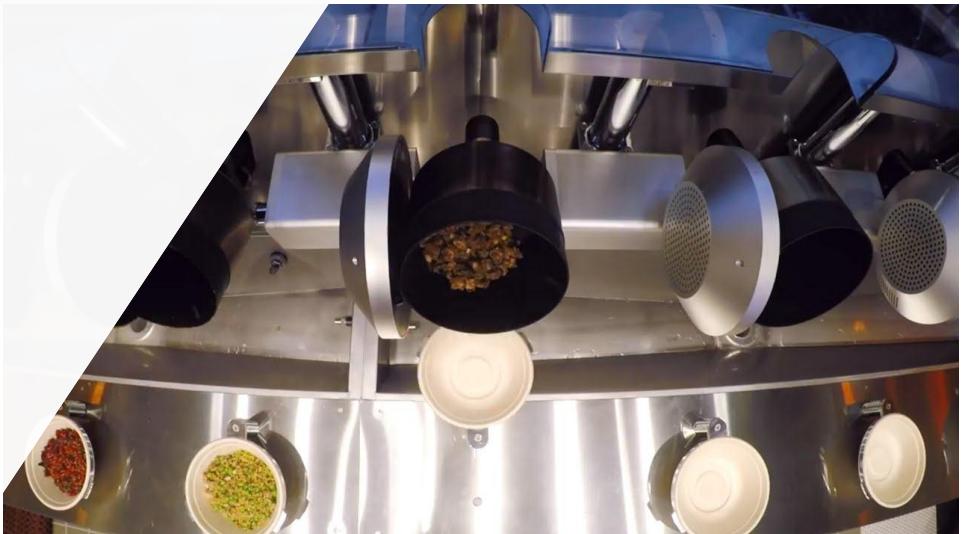
Four recent engineering graduates from the Massachusetts Institute of Technology (MIT) have opened a restaurant that contains what they describe as the world's first "robotic kitchen".

Originally conceived in their fraternity basement, Spyce in Boston now has seven robot chefs that prepare food in woks to create a selection of "bowls" in three minutes or under – and up to 200 per hour.

The engineers say they came up with the idea because they were "being priced out of wholesome and delicious food" and were "tired of spending \$10 on take-out lunches and dinners".

Spyce offers a variety of "bowls" each costing \$7.50, which are customisable to be vegetarian or vegan.

The restaurant has not gone completely human-free: it employs four people to operate the machines including a garde manger to check the food before it is served. Ingredients are prepared by a human team off site, and the entrepreneurs also sought advice from French chef Daniel Boulud, who acts as culinary director.



## Internet-connected Sensors Provide Concrete Data



The network runs on a low radio frequency, of 868MHz, to enable uninterrupted transmission through concrete and steel. The firm claims the node can run several years on a single battery and transmit even in the harshest site conditions.

“The web platform is the biggest value add for our client base, they can log in from anywhere, on a phone or PC, and see how their concrete slab is doing,” Scheps concludes.

A former prototype method of testing concrete strength using internet-connected sensors and processing power has been commercially deployed on around 40 construction projects across the UK.

The innovative technology, developed by UK tech start-up Converge, is based around a transmitter node that communicates data from sensors embedded in concrete over a mesh network.

The results are interpreted in real-time using sophisticated data analytics software to give an accurate real-time picture of the curing process and when formwork is ready to be struck.

After initial trials with a major contractor in 2015 the system has been deployed on projects including Hinkley Point C, the £1.7bn Royal Albert Docks development, 22 Bishopsgate and several Underground maintenance projects for Transport for London.

Raphael Scheps, co-founder and chief executive of Converge, told BIM+: “A year and a half ago it was only a prototype that worked but had not been battle tested. Some 40 sites on and the main thing we have achieved is reliability, by extended the range significantly and adding redundancy at multiple layers of the network.

“Our customers are striking concrete on the basis of our data and if they haven’t got reliable data they can’t make the important decisions.”

At Royal Albert Docks, Converge installed sensors in the post-tensioned concrete floor slabs, working with contractor Brookfield Multiplex and its concrete subcontractor to alter concrete mix designs to even out curing times over the summer and winter.

## Internet-connected Sensors Provide Concrete Data



Traditionally the process was done either by crush testing samples in the lab, or using embedded sacrificial temperature sensors in concrete. Both processes are manual and relatively time consuming, the latter requiring section engineers to plug handheld monitors into the embedded sensors on site, then return to the office to analyse the data.

Converge sensors connect to a small node running a wireless mesh network that sends data direct to its servers to be analysed in real time.

"Ask any engineer on site and they would tell you that concrete cures slower in winter than in summer but if you asked them to estimate how much slower they would have to guess," said Scheps. "Our accurate measurements enabled the project to achieve consistent floor cycle times and meet the overall target programme."

The system was used by TfL to help tunnel maintenance workers achieve rapid formwork striking times during the tight windows they were allowed to enter the tunnels, at weekends and nights.

Temperature data from sensors installed in the concrete was relayed long distances over a network of repeaters running from above ground down into the tunnel. The Converge platform worked out strength estimates and key strength milestones were sent to the team as text and email alerts.

The contract at Hinkley involves nuclear safety concrete and very large pours. "Converge is able to monitor temperature differentials across concrete, if the differential is too high it can result in thermal cracking that reduces the quality of the structure and its lifetime. That's especially relevant for large concrete components on a site like Hinkley," said Scheps.

On the £21m Ipswich Tidal Barrier project, currently being delivered by VBA, a joint venture between VolkerStevin, Boskalis Westminster and Atkins, concrete data processed by Converge was used to challenge existing standards related to concrete shrinkage.

A detailed temperature profile of the scheme, across the various concrete pours, was used to understand the impact of temperature differentials on shrinkage. Atkins used the data to challenge the accuracy of existing CIRIA standards on concrete shrinkage.

## Meet The Rebar Robot



The TyBot can be used at night or when site workers are occupied with other work, a further time-saving benefit. "This is the construction industry using robotics for a solution to a business problem," says Muck.

He reckons that when Brayman built the Hulton Bridge in Oakmont, Pennsylvania in 2015, it took a crew of eight to 10 workers about 7,400 man-hours over six months to lay over 10,000 sq m of rebar and tie more than two million intersections.

US entrepreneur and CEO of Advanced Construction Robotics Stephen Muck has developed a rebar-tying robot – which could slash the time spent on one of construction's most laborious tasks.

Few jobs on a construction site are more painstaking, monotonous and back-breaking than tying rebar. But a US entrepreneur may have found a time-saving alternative: a rebar-tying robot.

The TyBot, as it is called, was created by Stephen Muck, founder and CEO of Pennsylvania-based Advanced Construction Robotics. "It can tie rebar at the speed of a team of about six to eight site workers, with only one worker required to supervise," he says.

The robot has been trialled on bridge construction projects, and was deployed on a scheme in western Pennsylvania in late 2017. "We tied the bottom mat of rebar on a bridge deck and it went so well we were requested to go back and do the top mat the next week," says Muck.

The TyBot uses a motorised frame that can expand to a width of up to 42m, according to how wide the bridge deck is.

A robotic arm moves across the frame, hovering over each rebar intersection, then ties the reinforcement bar together. The frame moves across the bridge repeating this process.

Muck, who is also the CEO of contractor Brayman Construction, says that he devised the robot after becoming frustrated by labour shortages for rebar-tying work, which could slow down or delay a project.

"The TyBot both speeds up the work and reduces the number of people to do it," Muck says. "There is also a health and safety benefit to the robot as it eliminates injuries caused by workers stepping between the rebar and bending over to tie the intersections."

## Curtiss Zeus Concept Is A Futuristic Electric Motorcycle



Curtiss Motorcycles has revealed an original electric motorbike concept featuring an industrial look that could preview a production model for the year 2020.

The Zeus Concept was presented by Curtiss Motorcycles – formerly Confederate Motorcycles – at the Quail Motorcycle Gathering event.

It features a very industrial look, dominated by unpainted aluminum surfaces – seemingly machined out of solid metal blocks.

The distinctive design is completed by the carbon fiber wheels, double rotor brakes, LED lights, and a dash that can integrate an iPad.

The electric powertrain features a 14-kWh battery pack and is dubbed as “the world’s first E-Twin power unit.”



## Cheap 3-D printer can produce self-folding materials



"People hate warpage," Yao said. "But we've taken this disadvantage and turned it to our advantage."

To create self-folding objects, she and her team precisely control this process by varying the speed at which thermoplastic material is deposited and by combining warp-prone materials with rubber-like materials that resist contracture.

Researchers at Carnegie Mellon University have used an inexpensive 3-D printer to produce flat plastic items that, when heated, fold themselves into predetermined shapes, such as a rose, a boat or even a bunny.

Lining Yao, assistant professor in the Human-Computer Interaction Institute and director of the Morphing Matter Lab, said these self-folding plastic objects represent a first step toward products such as flat-pack furniture that assume their final shapes with the help of a heat gun. Emergency shelters also might be shipped flat and fold into shape under the warmth of the sun.

Self-folding materials are quicker and cheaper to produce than solid 3-D objects, making it possible to replace noncritical parts or produce prototypes using structures that approximate the solid objects. Molds for boat hulls and other fiberglass products might be inexpensively produced using these materials.

Other researchers have explored self-folding materials, but typically have used exotic materials or depended on sophisticated processing techniques not widely available. Yao and her research team were able to create self-folding structure by using the least expensive type of 3-D printer—an FDM printer—and by taking advantage of warpage, a common problem with these printers.

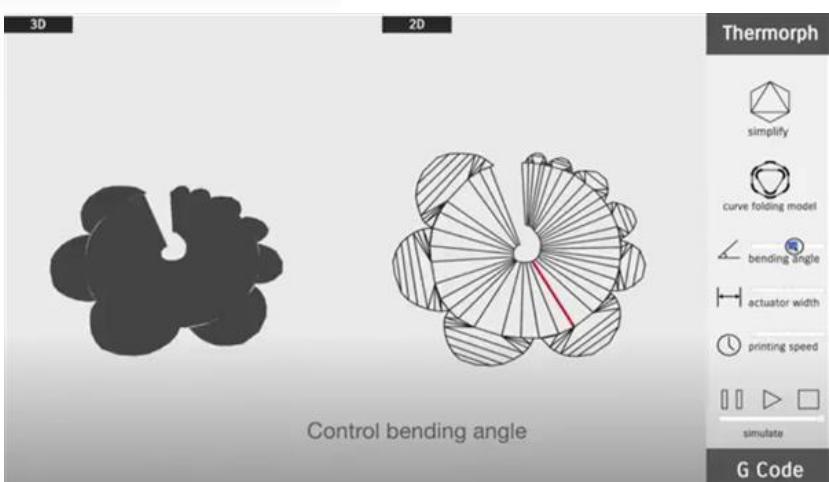
**"We wanted to see how self-assembly could be made more democratic – accessible to many users," Yao said.**

FDM printers work by laying down a continuous filament of melted thermoplastic. These materials contain residual stress and, as the material cools and the stress is relieved, the thermoplastic tends to contract. This can result in warped edges and surfaces.

# Edition

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## Cheap 3-D printer can produce self-folding materials



The objects emerge from the 3-D printer as flat, hard plastic. When the plastic is placed in water hot enough to turn it soft and rubbery—but not hot enough to melt it—the folding process is triggered.

Though they used a 3-D printer with standard hardware, the researchers replaced the machine's open source software with their own code that automatically calculates the print speed and patterns necessary to achieve particular folding angles.

"The software is based on new curve-folding theory representing banding motions of curved area. The software based on this theory can compile any arbitrary 3-D mesh shape to an associated thermoplastic sheet in a few seconds without human intervention," said Byoungkwon An, a research affiliate in HCII.

"It's hard to imagine this being done manually," Yao said.

Though these early examples are at a desktop scale, making larger self-folding objects appears feasible.

"We believe the general algorithm and existing material systems should enable us to eventually make large, strong self-folding objects, such as chairs, boats or even satellites," said Jianzhe Gu, HCII research intern.

# Edition

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## Mercedes-AMG GT S Roadster



The latest model in the AMG GT family is a roadster with a retractable soft top, reaching a top speed of more than 300 km/h.

The Mercedes-AMG GT S Roadster has joined the AMG GT family, following the recently unveiled four-door version.

Positioned between the GT and GT C in terms of technical features, the GT S Roadster shares the interior as well as the standard, not-widened body with the GT.

Compared to it however it features several enhancements, including adaptive suspension, a limited slip differential.

The Mercedes-AMG GT S Roadster features a three-layered fabric soft top supported by a lightweight magnesium/steel/aluminium structure.

Additional roll-over protection is provided by an integrated aluminium cross-member, while the inserted acoustic mat improves noise comfort.

### Design

From the expressive AMG radiator grille to the long bonnet and the muscular tail end, the two-seater guarantees a pure sports car experience even when stationary. The flat front section and forward-sloping radiator grille make the Roadster appear to hug the road.

At the same time this shape lowers the vehicle's back-pressure point, enhancing the flow of cooling air and the car's aerodynamic performance.

The front apron in jet wing design emphasises the car's width, making it sit flatter on the road. The large outer air inlets guarantee the supply of cooling air to the engine.

The LED High Performance headlamps offer more safety at night and an unmistakably sporty and distinctive look. Thanks to LED technology, they illuminate the road more effectively than conventional headlamps – with lower energy consumption.

# Edition

May 2018

## Mercedes-AMG GT S Roadster



This is available over a wide engine speed range from 1900 to 5000 rpm. The eight-cylinder power unit delivers muscular performance in all engine speed ranges, combined with high efficiency for low fuel consumption and emission levels.



A sprint from standstill to 100 km/h is absolved in 3.8 seconds. The dynamic power delivery continues right up to the top speed of 308 km/h.

Viewed from the side, the arched roof line (when the soft top is closed) and the frameless doors are eye-catching features. The surfaces and lines of the side wall flow into the tail end with a dramatic tapered effect.

The long bonnet with its pronounced powerdomes, the greenhouse which has been moved far back, the large wheels and broad tail end also contribute to the distinctive looks. As standard the AMG GT S Roadster is shod with mixed tyres on 19-inch rims at the front and 20-inch rims at the rear.

The active air regulation system AIRPANEL included as standard is a particular technical highlight. Vertical louvres at the bottom of the front apron are opened and closed electronically by means of an electric motor in around one second to guarantee the required amount of cooling. Constantly achieving the ideal position calls for highly intelligent and fast control.

During normal driving with no increased cooling demand, the louvres are closed for reduced drag and the air is directed at the underbody. This improves the aerodynamic efficiency of the vehicles. Only when certain components reach predefined temperatures and the air demand is particularly high do the louvres open to allow the maximum cooling air flow to the heat exchangers.

As another active aerodynamic component the Roadster features an extendable rear spoiler. This reduces lift at the rear axle at higher speeds. With its broad shoulders and expressive tail light graphics, the rear end enhances the emotional overall appearance.

### Technical Features

The AMG 4.0-litre V8 biturbo in the AMG GT S Roadster delivers an output of 384 kW (522 hp) and maximum torque of 670 Nm.



## IBM To Invest In Tech To Predict Floods, Cyclones In India



Bajwa said in the last two decades, 2.5 billion people have been directly affected by the nature's fury, resulting in economic impact of nearly \$1.5 trillion.

The company plans to hold road shows in Delhi, Mumbai, Bangalore and Hyderabad in the coming months to promote the initiative, the spokesperson said.

IBM has joined hands with the United Nations, American Red Cross, David Clark Cause and the Linux Foundation for a global initiative to use technology to predict and effectively respond to natural disasters.

IBM has said it will invest in technologies to predict natural disasters like floods and cyclones in India, as part of a \$30-million global programme aimed at disaster relief.

The global tech major has joined hands with the United Nations, American Red Cross, David Clark Cause and the Linux Foundation for a global initiative to use technology to predict and effectively respond to natural disasters, its managing director for India, Karan Bajwa, said.

"The Indian subcontinent is highly vulnerable to cyclones, droughts, earthquakes and floods, affecting millions of lives and impacting the economy every year," he said in a blog post.

Some of the disasters in India which the five-year programme may focus on would be floods, earthquakes, drought, tsunami, cyclone storms, avalanches and landslides, a company spokesperson said.

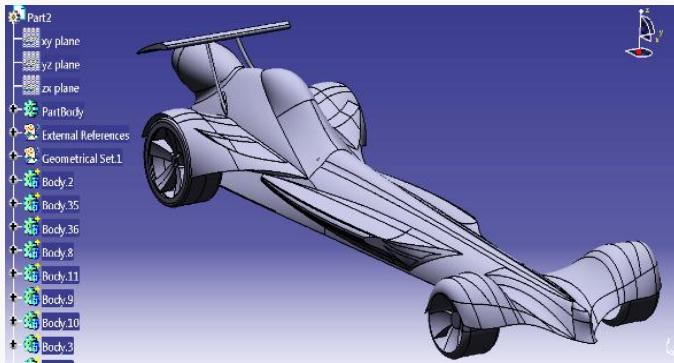
As part of the global programme, it is calling on software developers, including its employees, to create the required solutions using cloud, data, artificial intelligence and block chain platforms.

**"Technology can be a powerful force to advance human rights and build more equitable societies,"** said Laurent Sauveur, head of external relations, United Nations Human Rights Office.

# Edition

May 2018

## Student's Corner



By :  
Arjit Kulshrestha  
L.N.C.T Bhopal  
Design Tool : **CATIA V5.**



# Edition

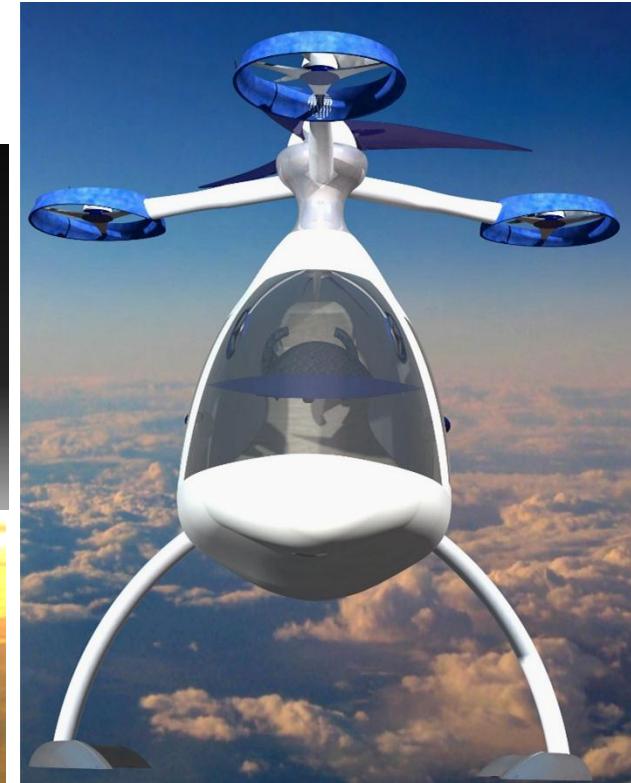
May 2018

## Student's Corner

### DAuto Training Yield



By:  
Piyush Patle  
O.I.S.T Bhopal  
Design Tool: CATIA V5

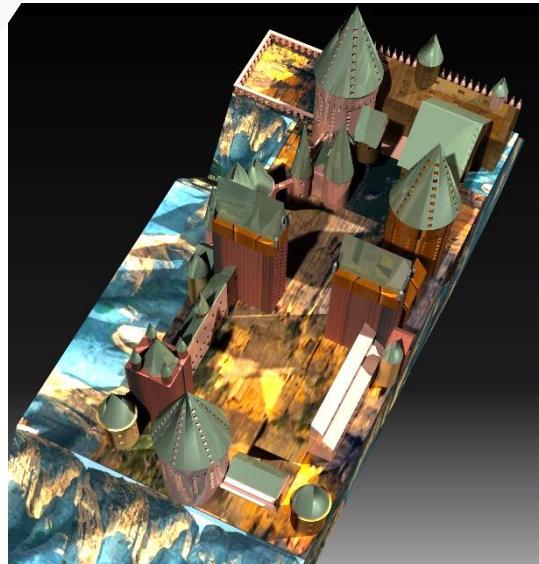
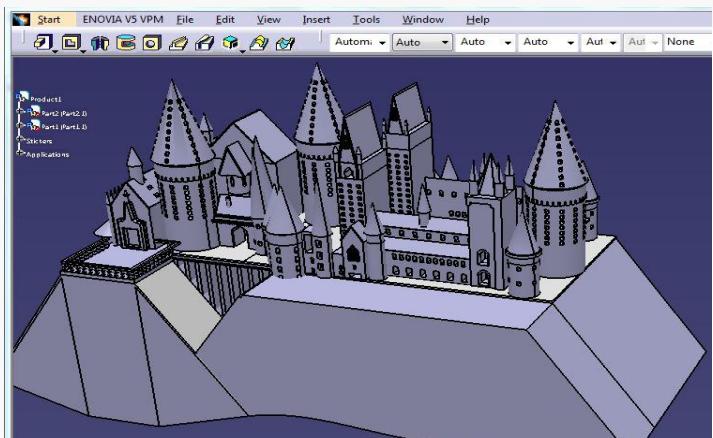


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## Student's Corner

### DAuto Training Yield

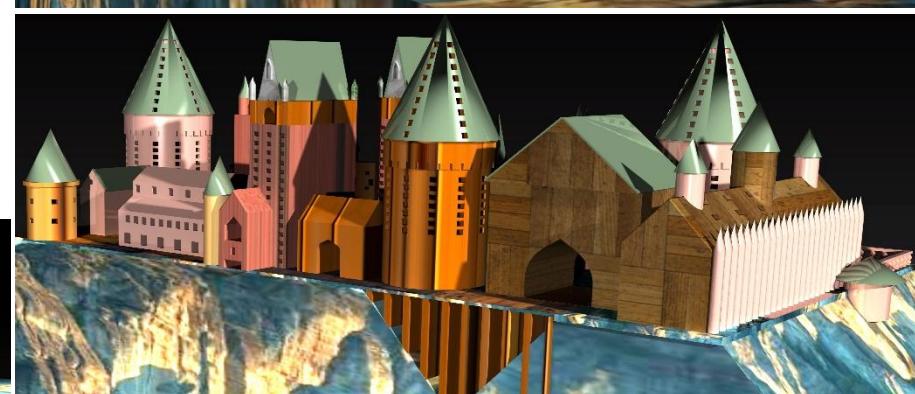


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By :  
**Harish Raghav**  
(T.I.T. Advance) Bhopal  
Design Tool : **CATIA V5.**



**“ Never be satisfied with inaction. Question and redefine your purpose to attain progress ”**

*Jeffrey K. Liker, The Toyota Way*

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