

IEEE Brainwaves

IEEE Brainwaves Newsletter is published by the IEEE Brainwaves student chapter of D.J. Sanghvi College of Engineering

IEEE Brainwaves Feature Events :

Industrial Visit to Imaginarium the 3D Printing Company



They provide prototypes to an assortment of industries from jewellery, engineering, automotive, architecture, consumer goods, etc. With a friendly environment to work in Imaginarium has its unique office on the 7th floor of 'The Great Oasis' ,MIDC. Imaginarium provides 3D printing solutions to many industries providing a diverse range of products and services .Thus the company highlights all the advantages of opting for 3D printed products spanning in all the domains. Imaginarium has a vibrant office including a projection room to showcase documentaries and make people aware with what they do. This place is also the place where many discussions and meetings take place. They have a very helpful and interactive staff .They entertained us all throughout the tour and showed us each and every nook and corner of their office. We started our tour from the projection room. After getting a brief insight into the company's background we all proceeded towards the various sections taking a look at how different departments function .Their hard work and dedication took us by surprise. Imaginarium has a very large socialising chamber which contains a large pool table along with a table tennis area which provides recreation and bonds employees over their short breaks during work. There are different departments working in sync to

make a final product and to be able to deliver it across the country. We had a look at all the departments and their work finally we moved to the manufacturing unit which uses 3D printers to produce stuff. There are many ways for manufacturing 3D printed products. Some of the mechanisms used at Imaginarium include:

1. SLA: - Stereolithography (SLA) is often considered the pioneer of the Rapid Prototyping industry with the first commercial system introduced in 1988 by 3D Systems. The SLA system consists of a Ultra-Violet Laser, a vat of photo-curable liquid resin, and a control system.
2. SLS: -Laser Sintering is the second most commonly used process after Stereolithography. Whilst accuracy and surface finish are not as good, the real benefit is the functionality that can be achieved. Working with nylon (or a filled nylon), parts demonstrate a very high level of toughness. This functionality is also behind the success that Laser Sintering has achieved in Rapid Manufacturing. The SLS system consists of a CO2 Laser, a part chamber, and a control system.
3. 3D Printing Setup at Imaginarium
Machines for 3D Printing System
 - 3 InvisionHR 3D Printers from 3D Systems, USA
 - 2 ProJet 3D Printer from 3D Systems, USA
 Materials for 3D Printing System
 - SR200
4. Vacuum Casting - Imaginarium is one of the few fully-integrated product development services specialists that offer highly-sophisticated expertise in urethane castings. For injection moulded quality finish and performance without the cost and delays of injection moulding tools, vacuum-casting is the ideal process. It is used extensively for functional prototypes for marketing and consumer trials or as production parts for lower volume.

IEEE Spectrum Article :

The Insiders Guide to Drone Photography

This expert guide will get you off the ground.

The camera swoops in on the face of a cliff rising more than 100 meters from the surrounding scrublands. Its view reveals a young woman in a fluorescent orange tank top perched halfway up a wall of ochre quartzite. The camera then cuts to just a few meters away from the rock, close enough to make out the woman's gaze as she looks for the next handhold.

How on earth did they get those amazing shots? You might indeed be wondering that if the title of this YouTube video hadn't given the answer away: "Rock Climbing with the DJI Phantom 2." The Phantom 2 is a tiny electric helicopter you can buy for about US \$700.



The ability to capture footage of this sort is not exactly new: For many years the film industry has taken advantage of radio-controlled (RC) helicopters to carry movie cameras to places that cranes and dollies couldn't go. But now small multiple-motor helicopters, or multicopters, have largely supplanted the more mechanically complex single-engine model helicopters used in the past for this task.

These camera-equipped electric drones have been getting cheaper and easier to use, in large part because of the proliferation of smartphones, which led to the development of inexpensive gyroscopes and accelerometers and made it possible to mass-produce very capable yet inexpensive autopilots. Indeed, the cost of camera-equipped multicopters is now well within the means of the countless people who want to take aerial videos for a variety of purposes: journalism, wildlife observation, search-and-rescue operations, real-estate photography—or perhaps just plain fun.

But before you rush out and buy one of these systems for your own pet project, you should educate yourself about the capabilities and limitations of current technology. At least learn enough to know which features are important to your application and which are not. And above all, find out what is safe and legal to do. Here's a guide to get you started.

Although drones have historically been associated with military operations, small remotely piloted aircraft are increasingly used for peaceful purposes. Already in Europe, green-power producers fly drones to inspect the blades of wind turbines, farmers use them to survey crops, and oil companies inspect their installations with them. One U.K. company has even used a drone of this kind for close inspection of a tower used to burn off combustible gases—even as the flames rose just meters away. Multicopters are a type of drone with at least three independent motors and propellers, although the number of motors generally ranges between four and eight, depending on the load to be carried and how much redundancy is sought. A small onboard computer controls the distribution of power to the different motors, which is how most multicopters are steered through the air.

Continue Reading at <https://spectrum.ieee.org/aerospace/aviation/the-insiders-guide-to-drone-videography>