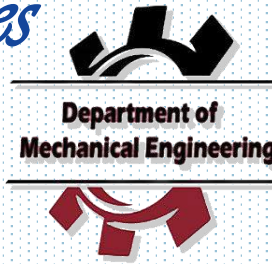


# Brain Waves

Department of Mechanical Engineering  
**JEPPIAAR INSTITUTE OF TECHNOLOGY**  
 "Self Belief. Self Discipline. Self Respect"

## VISION

"Jeppiaar Institute of Technology aspires to promote futuristic technical education with the perspective of innovative industrial and social application for the betterment of humanity"



Our beloved **Director Dr. N. MARIE WILSON** inaugurated Sewage Treatment Plant (STP) in our college campus which aim in the process of removing contaminants from wastewater, primarily from college sewage. It includes physical, chemical, and biological processes to remove these contaminants and produce environmentally safe treated wastewater which can be recycled and reused. This is one of a kind facility available in the institutions around Chennai.

## Mech'o facts:

Do you know ??

1.The tallest wind turbine in the world has rotor tips that reach over 200 metres(656 feet) above the ground.

2.Arvind kejriwal the chief minister of Delhi, is a Mechanical Engineer from IIT kharagpur. Later he join politics

3.Kate Gleason is the first women president of National Bank and first woman member of the American society of Mechanical engineers.

## Inside this issue:

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Jet Propelled 3D-Printed Drone Claims Speed Record	11

**Jeppiaar Institute of Technology -Sewage Treatment Plant (STP)**



**ASME PROPOSED EVENTS**

S.No	DATE	NAME OF THE EVENT
1	09.02.2016	TECH CONNEXTION
2	24.02.2016	AUTOQUIZ
3	02.03.2016	GROUP DISCUSSION
4	23.03.2016	POSTER MAKING
5	06.04.2016	NEWSLETTER RELEASE

**Upcoming Events of ASME**

National Level Technical Symposium "AGRONA-2016" is going to be held in Jeppiaar Institute of Technology will be conducted by ASME Student Chapter and Department of Mechanical Engineering.





# GO KART DESIGN CHALLENGE 2015

## THE NEVER ENDING JOURNEY

Go Kart Design Challenge is a contest formulated to enhance the approach of students practicing Engineering and Diploma courses. This event is fundamentally all about designing and fabricating a Go Kart at very low expenditure. We expect the teams to manufacture Go Karts yielding optimum performance. The teams participating in this contest have to go through two rounds, Pre-Final Round (PFR) and Final Round (FR).

Chassis Dimensions	1 inch tube or rectangular pipe
Chassis material	Seamless tube
Maximum Turning Radius	3.5 metre
Steering system	Ackermann steering (Mechlinkage)
Braking system	Hydraulic Braking
Engine	Briggs and Stratton 550 series
Maximum displacement	127 cc
Maximum torque	5.5 bhp
Max RPM	3600 rpm
Ground clearance	Min. 1 inch
Transmission	Centrifugal clutch



# Article's Corner

**Article Name** : **Upcoming Mechanical Engineering Events**

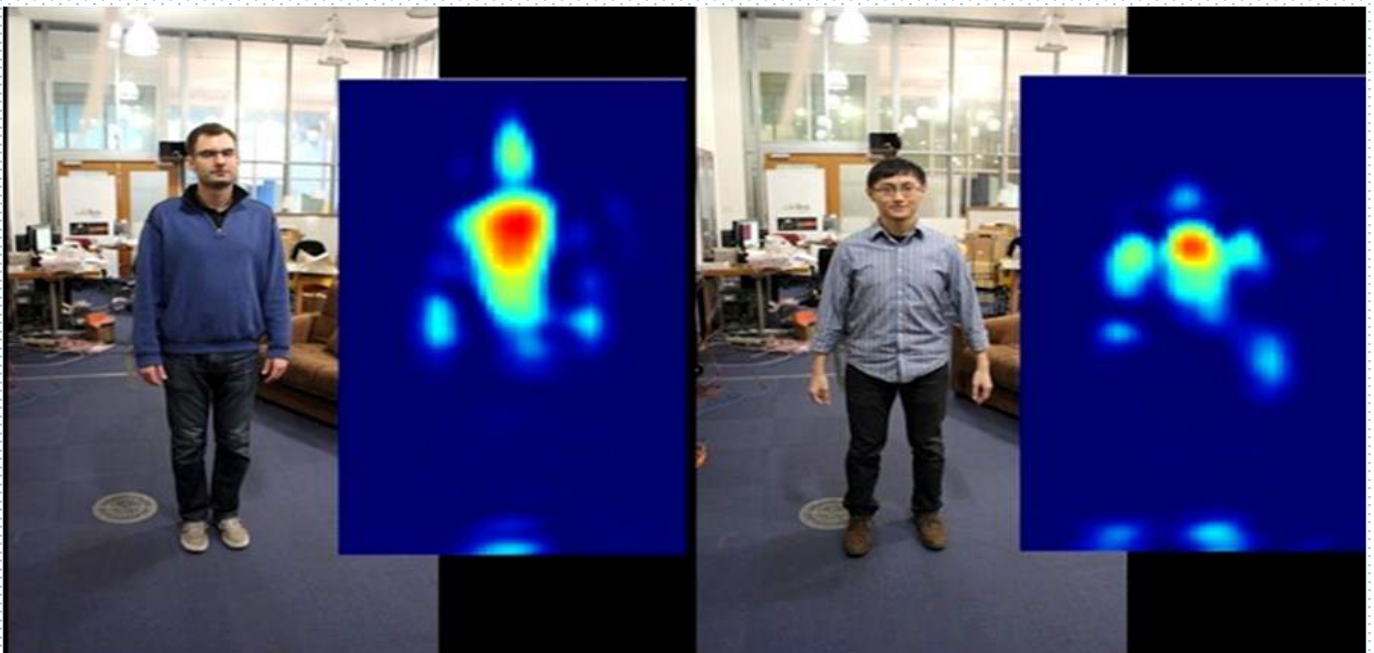
**Article by** : **Niranjan Kumar R (Final Year)**

Start Date	Fest Name	Fest Type	College Name	City	State
01 Feb 2016	Desire '16	National level Robotics Championship	IIT Indore	Indore	Madhya Pradesh
01 Feb 2016	AMPLE 2016	Technical Symposium	SV College of Engineering	Tirupati	Andhra Pradesh
01 Feb 2016	CSI BRAINWAVES 2K16	Techno Management Fest	Malla Reddy Institute of	Hyderabad	Telangana
01 Feb 2016	IAETSD: Workshop on Soft Computing Techniques & its Applications WSCITIA 2016	Workshop	National College of Engineering Tirunelveli	Tirunelveli	Tamil Nadu
05 Feb 2016	International Conference on Modern Engineering, Science and Technology 2016	Conference	Institute of Engineering Research	Salem	Tamil Nadu
06 Feb 2016	One Day International Workshop on Future Trends in IC Engines ( Combustion-2016)	International Workshop	Top Engineers	Chennai	Tamil Nadu
05 Feb 2016	Transmission 2016	Technical Symposium	Xavier Institute of Engineering	Mumbai	Maharashtra
05 Feb 2016	AFOSEC '16	Techno Cultural Fest	VR Siddhartha College of Engineering	Vijayawada	Andhra Pradesh
05 Feb 2016	Quark 2016	Techno Management Fest	BITS Pilani KK Birla Goa	Goa	Goa
05 Feb 2016	INKARNO 2016	Techno Management Fest	National Institute of Construction Management and Research	Ponda	Goa
06 Feb 2016	Challenges and Innovative Practices in Automotive Technology CIPAT 2016	Workshop	Kalasalingam University	Virudhunagar	Tamil Nadu

# Upcoming EVENTS

Start Date	Fest Name	Fest Type	College Name	City	State
06 Feb 2016	International Conference on Advances in Engineering and Technology ICAET - 2016	International Conference	Alfa College of Engineering and Technology	Kurnool	Andhra Pradesh
06 Feb 2016	IIRDEM :International Conference on Technology Enhancement in Engineering and Management ICTEEM-2016	International Conference	IIRDEM	Chennai	Tamil Nadu
11 Feb 2016	Yugam 2016	Technical & Cultural Fest	Kumarguru College of Technology	Coimbatore	Tamil Nadu
09 Feb 2016	IT Fiesta '16	Technical Festival	Acharya Institute of Graduate Studies	Bengaluru	Karnataka
09 Feb 2016	Robogo Workshop '16	Workshop	VIT University Chennai Campus	Chennai	Tamil Nadu
08 Feb 2016	National Workshop on Computational Fluid Dynamics 2016	Workshop	KS Rangasamy College of Technology	Tiruchengode	Tamil Nadu
13 Feb 2016	One Day International Workshop on Ethical Hacking ( Hack-2016 )	International Workshop	Top Engineers	Chennai	Tamil Nadu
11 Feb 2016	The Spark 16	Technical Symposium	Anna University	Chennai	Tamil Nadu
12 Feb 2016	Sanketa 16	Technical Symposium	Sagi Rama Krishnam Raju Engineering College	Bhimavaram	Andhra Pradesh
15 Feb 2016	Sanjeevani 16	Techno Management Fest	Bharathidasan Institute of Technology	Tiruchirappalli	Tamil Nadu
13 Feb 2016	Cybertronix Workshop 16	Workshop	NIT Tiruchirappalli	Tiruchirappalli	Tamil Nadu
12 Feb 2016	Speech Robo Workshop 16	Workshop	Chaitanya Bharathi Institute of Technology CBIT	Hyderabad	Telangana

## 'X-Ray Vision' Uses Radio Waves to



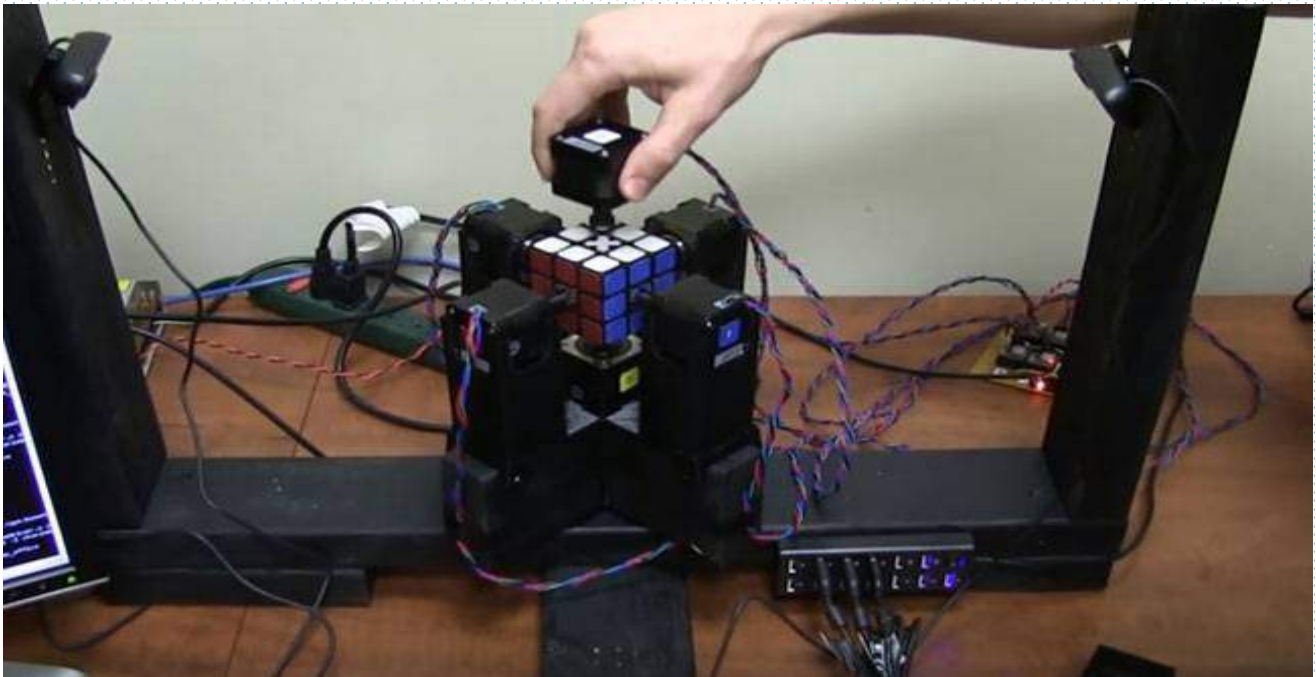
"X-ray vision" that can track people's movements through walls using radio signals could be the future of smart homes, gaming and health care.

A new system built by computer scientists at MIT can beam out radio waves that bounce off the human body. Receivers then pick up the reflections, which are processed by computer algorithms to map people's movements in real time, they added.

Unlike other motion-tracking devices, however, the new system takes advantage of the fact that radio signals with short wavelengths can travel through walls. This allowed the system, dubbed RF-Capture, to identify 15 different people through a wall with nearly 90 per cent accuracy, the researchers said. The RF-Capture system could even track their movements to within 0.8 inches (2 centimetres).

Researchers say this technology could have applications as varied as gesture-controlled gaming devices that rival Microsoft's Kinect system, motion capture for special effects in movies, or even the monitoring of hospital patients' vital signs.

## Don't Blink: Robot Solves Rubik's Cube In Just 1 Second



Actually, some of the robot's times are under 1.2 seconds. A video on YouTube posted by software engineer Jay Flatland shows the robot — a collection of motors, webcams and 3D-printed parts — whizzing to a solution in 1.196 seconds.

One time recorded in the video was even quicker: 1.04 seconds. That came after Flatland covered the robot's cameras with a piece of paper and scrambled the cube by hand before replacing it in the frame.

The robot uses a specially prepared cube with small holes drilled into each side, allowing it to grip the cube securely. Describing the robot in the video, Flatland says information from four USB webcams is fed into a computer that uses a cube-solving algorithm called Kociemba, which then "determines a set of moves to solve the cube very rapidly."

The robot's time is several seconds faster than the fastest human time of 4.904 seconds, which was set in November by 14-year-old Lucas Etter of Lexington, Ky. It's also two seconds quicker than the time of 3.253 seconds that has been the robot record for solving a Rubik's Cube since March of 2014.

## Laser Armed cameras can 'see' through walls



With the help of lasers, cameras can track moving objects hidden around corners, scientists say.

The finding could one day help vehicles see around blind corners to avoid collisions, researchers added.

Laser scanners are now regularly used to capture 3D images of items. The scanners bounce pulses of light off targets, and because light travels at a constant speed, the devices can measure the amount of time it takes for the pulses to return.

This measurement reveals how far the light pulses have travelled, which can be used to recreate what the objects look like in three dimensions.

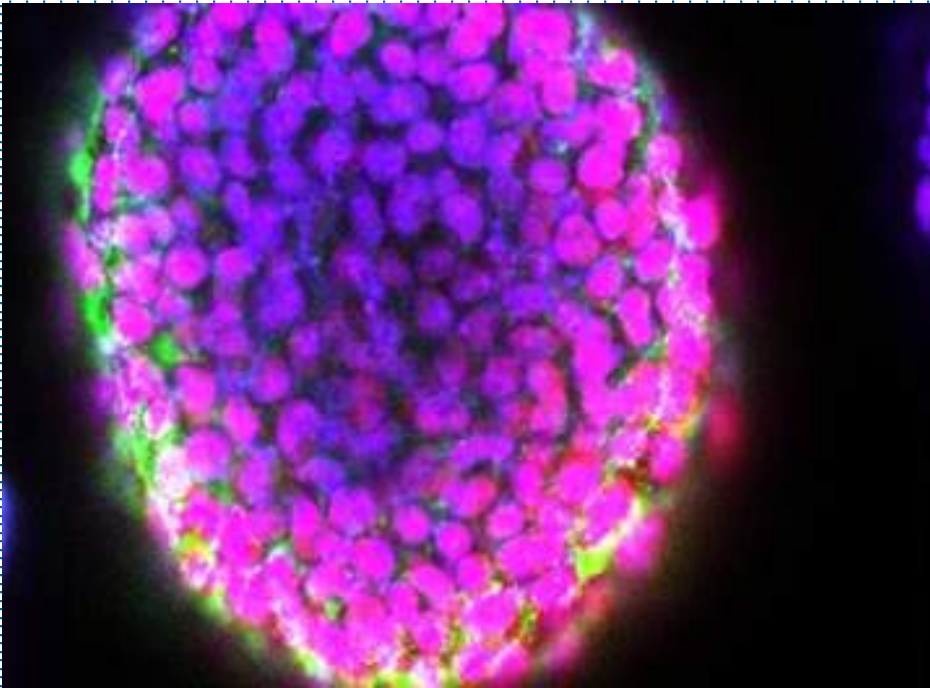
Prior research suggested that lasers could help locate items hidden around corners by firing light pulses at surfaces near the objects. These surfaces can act like mirrors, scattering the light onto any obscured targets.

By analysing the light that is reflected off the objects and other surfaces back to the scanner, researchers can reconstruct the shapes of the items — for instance, an 8-inch-tall (20 centimetres).

One potential application of this research is a system that helps cars see around bends to avoid collisions. "If the other vehicle or person is arriving too fast, implying that there could be a collision, then the system could feed this information to the car, which could then autonomously decide to slow down."



## Doctor could 3D-print micro-organs with new technique



Gone are the days when 3D printers merely built plastic trinkets — scientists say 3D-printed structures loaded with embryonic stem cells could one day help doctors print out micro-organs for transplant patients.

Embryonic stem cells, obtained from human embryos, can develop into any kind of cell in the body, such as brain tissue, heart cells or bone. This property makes them ideal for use in regenerative medicine —

repairing and replacing damaged cells, tissues and organs.

Scientists typically experiment with embryonic stem cells by dosing them with biological cues that guide them toward developing into specific tissue types — a process called differentiation. This process begins with the cells forming spherical masses called embryoid bodies — an activity that mimics the early stages of embryonic development.

Previous research suggested the best way to grow embryonic stem cells is not in flat lab dishes, but in 3D environments that mimic how these cells might develop in human bodies.

Recently, scientists developed 3D printers for embryonic stem cells. A 3D printer works by depositing layers of material, just as ordinary printers lay down ink, except it can also lay down flat layers on top of one another to build 3D objects.

Until now, 3D printers for embryonic stem cells just generated flat arrays or simple mounds, called "stalagmites," of cells. Now, researchers say they have, for the first time, developed a way to print 3D structures laden with embryonic stem cells.

## New Type of Carbon is Harder & Brighter than Diamond



Scientists have designed a new type of carbon that is harder and brighter than naturally formed diamonds.

For those who want to wear a one-of-a-kind sparkler on their fingers, the new material, called Q-carbon, also gives off a soft glow.

"This new phase is very unique," said study co-author Jagdish Narayan, a materials scientist at North Carolina State University. "It has novel electrical, optical and magnetic properties."

### Heat and pressure

Despite being one of the most ubiquitous and iconic symbols of wealth and luxury, scientists still don't fully understand how diamonds are formed.

Most think the diamonds mined today formed between 1 billion and 3 billion years ago, at a depth of about 62 miles (100 kilo meters) below the Earth's surface.

### Harder and brighter

To go one better, Narayan and his colleagues heated up an unstructured mass of carbon atoms, known as amorphous carbon, with tiny pulses of lasers.

The incredibly focused light beams melted the interior of solid carbon into liquid carbon. Then, they used a process known as quenching, which rapidly cools material by submerging it in a liquid.

# Jet Propelled 3D-Printed Drone Claims Speed Record



A new jet-powered drone might be the most complex flying machine ever built using 3D printing.

The drone, which made its debut at the Dubai Air show earlier this month, looks nothing like your average 3D-printed toy plane. It has a 9-foot-long (3 meters) wingspan and an aerodynamic design that gives it a futuristic appearance.

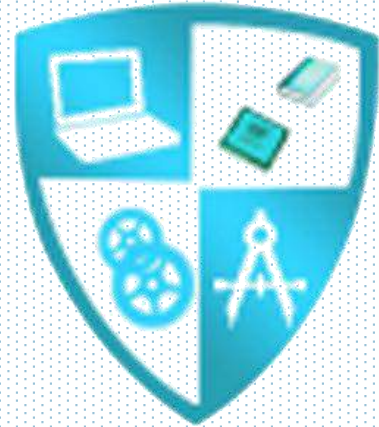
But about 80 per cent of the sleek, unmanned aerial vehicle (UAV) is designed and manufactured using 3D printing methods, according to Aurora Flight Sciences and Stratasys, the companies that developed the drone. The UAV weighs just 33 lbs. (15 kilograms) and can fly at speeds exceeding 150 mph (241 km/h).

"To the best of our knowledge, this is the largest, fastest and most complex 3D-printed UAV ever produced," Dan Campbell, aerospace research engineer at Aurora Flight Sciences, said in a statement.

The drone consists of several hollow parts that were produced using a common 3D printing process known as fused deposition modelling (FDM), in which a molten plastic material is extruded, layer by layer, onto a surface to form an object.

## What's in our next issue?

1. ASME Activities
2. Aerogel
3. Carbon-Nanotube-Dampening Material.
4. Claytronics
5. Airborne wind turbine



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