VIVA INSTITUTE OF TECHNOLOGY

VIRAR

BOOTSTRAP

THE NEWSLETTER OF THE DEPARTMENT OF COMPUTER ENGINEERING

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Vision

To develop competent citizens who will be valuable contributors in the field of technology and science.

Mission

1. To create an environment which will stimulate research, creativity and innovation.
2. To provide students with comprehensive knowledge of the latest developments in Computer Engineering.

Program Educational Objectives

1. To equip students with solid foundation for solving hardware and software problems as per the needs of the corporate sector.
2. To develop the ability among the students to understand and interpret technical issues which is important for creating dynamic software.
3. To create an environment for inculcating leadership quality by nurturing raw talent.
4. To empower students and faculties for research and innovations.
5. To inculcate ethical, behavioural, organisational and social values.

PRINT BRUSH A4

Ink jet Printer. Digital camera. One device. Compact, easy and fun the Print Brush™ 4X6 is the first of its kind. A pocket-sized printer with a built-in camera.

Featuring Print Dreams RMPT™ Full technology, it can print in color directly onto virtually any surface.

Hold it in your hand and sweep back and forth just like a brush!

World's smallest printer device...!!

The Print Brush A4 is the next step of evolution of the print brush 4x6 and will be by far the smallest printer device in the world that can print full size formats (A4 or letter size)

- Resolution: 1200dpi full color
- Print technology: inkjet and RMPT™ Full
- Max. Speed: 400mm/sec
- Volume: Approx. 200cc
- Weight: Approx. 250gm
- Interfaces: USB 2.0, Bluetooth, Wi-Fi
- Power supply: rechargeable Li-Pol battery.

The Print Brush 4X6 is a handheld RMPT ink-jet printer, with a built-in digital camera, able to print in color (600 dpi) directly onto virtually any flat surface, including paper, plastic, wood and even fabric.

GOOGLE PRIUS

The **Google Self-Driving Car** is a project by Google that involves developing technology for autonomous cars. The software powering Google's cars is called Google Chauffeur.[2] Lettering on the side of each car identifies it as a "self-driving car". The project is currently being led by Google engineer Sebastian Thrun, former director of the Stanford Artificial Intelligence Laboratory and co-inventor of Google Street View. Thrun's team at Stanford created the robotic vehicle Stanley which won the 2005 DARPA Grand Challenge and its US$2 million prize from the United States Department of Defense.[3] The team developing the system consisted of 15 engineers working for Google, including Chris Urmson, Mike Montemerlo, and Anthony Levandowski who had worked on the DARPA Grand and Urban Challenges.[4] It is only then that the Google Prius starts its drive. However, not by itself; on the driver's seat, there is a trained person who must take control if needed. Moreover, on the co-pilot seat, there is another expert who permanently verifies the software's functioning and application. This system, if efficient, should reduce the number o car accidents to a great extent.

Google's robotic cars have about $150,000 in equipment including a $70,000 lidar (**li**ght ra**dar**) system.[12] The range finder mounted on the top is a Velodyne 64-beam laser. This laser allows the vehicle to generate a detailed 3D map of its environment. The car then takes these generated maps and combines them with high-resolution maps of the world, producing different types of data models that allow it to drive itself.[13]

Currently (as of June 2014), the system works with a very high definition inch-precision map of the area the vehicle is expected to use, including how high the traffic lights are; in addition to on-board systems, some computation is performed on remote computer farms.[14]

In August 2011, a human-controlled Google driverless car was involved in a crash near Google headquarters in Mountain View, California. Google has stated that the car was being driven manually at the time of the accident.[25]

A previous incident involved a Google driverless car being rear-ended while stopped at a traffic light.[26] Google says that neither of these incidents were the fault of Google's car but the fault of humans operating cars.

MARTIN JET PACK

The **Martin Jetpack** is an experimental aircraft. Though its tradename uses the phrase "jet pack", the craft uses ducted fans for lift. Martin Aircraft Company of New Zealand developed it, and they unveiled it on July 29, 2008, at the Experimental Aircraft Association's 2008 AirVenture in Oshkosh, Wisconsin, US. The Federal Aviation Administration classifies it as an experimental ultralight airplane.

On 29 May 2011, the Martin Jetpack successfully completed a remotely controlled unmanned test flight to 1,500 m (5,000 ft) above sea level, and carried out a successful test of its ballistic parachute.

It uses a gasoline engine with two ducted fans to provide lift. Its design claims a 60-mile-per-hour maximum speed, a 5,000-foot flight ceiling, with a flight time about 30 minutes on a full fuel tank.

The jetpack could be available on the market as soon as 2014, and is expected to sell for approximately US$150,000,[1] with the initial production model aimed at military and "first responder" emergency crews such as firefighters.

HOMOMORPHIC ENCRYPTION

Craig Gentry is creating an encryption system that could solve the problem keeping many organizations from using cloud computing to analyze and mine data: it's too much of a security risk to give a public cloud provider such as Amazon or Google access to unencrypted data.

The problem is that while data can be sent to and from a cloud provider's data center in encrypted form, the servers that power a cloud can't do any work on it that way. Now Gentry, an IBM researcher, has shown that it *is* possible to analyze data without decrypting it. The key is to encrypt the data in such a way that performing a mathematical operation on the encrypted information and then decrypting the result produces the same answer as performing an analogous operation on the unencrypted data. The correspondence between the operations on unencrypted data and the operations to be performed on encrypted data is known as a homomorphism. "In principle," says Gentry, "something like this could be used to secure operations over the Internet."

With homomorphic encryption, a company could encrypt its entire database of e-mails and upload it to a cloud. Then it could use the cloud-stored data as desired—for example, to search the database to understand how its workers collaborate. The results would be downloaded and decrypted without ever exposing the details of a single e-mail.

Gentry began tackling homomorphic encryption in 2008. At first he was able to perform only a few basic operations on encrypted data before his system started producing garbage. Unfortunately, a task like finding a piece of text in an e-mail requires chaining together thousands of basic operations. His solution was to use a second layer of encryption, essentially to protect intermediate results when the system broke down and needed to be reset.

"The problem of how to create true homomorphic encryption has been debated for more than 30 years, and Craig was the first person who got it right and figured out how to make the math work," says Paul Kocher, the president of the security firm Cryptography Research. However, Kocher warns, because Gentry's scheme currently requires a huge amount of computation, there's a long way to go before it will be widely usable.

Gentry acknowledges that the way he applied the double layer of encryption was "a bit of a hack" and that the system runs too slowly for practical use, but he is working on optimizing it for specific applications such as searching databases for records. He estimates that these applications could be ready for the market in five to 10 years.