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- ▶ OUR SPIRIT
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SPECTRUM

DEPARTMENT OF ECE

ELECTRAZE

Version 3.0 2014-15

Opening A Devoid Mind

ECE Spectrum continuously strives to nurture the intellect in oneself by providing an environment which stimulates the technical and general mind of students. It acts as efficacious platform to exhibit ones technical ideas and organizing abilities.



COLLEGE OF ENGINEERING AND TECHNOLOGY

Delighting Technical Minds

**Dr. Mahalingam College of
Engineering and Technology**

Pollachi – 642 003

**DR. MAHALINGAM COLLEGE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

NPTC –MCET Campus, Udumalai Road, Pollachi-642 003.
Ph:04259-236030/40/50; Fax:04259-236070.

VISION OF THE INSTITUTE:

We develop a globally competitive workforce and entrepreneurs.

MISSION OF THE INSTITUTE:

Dr. Mahalingam College of Engineering and Technology, Pollachi endeavors to impart high quality, competency based technical education in Engineering and Technology to the younger generation with the required skills and abilities to face the challenging needs of the industry around the globe. This institution is also striving hard to attain a unique status in the international level by means of infrastructure, start-of-the-art computer facilities and techniques.

VISION OF THE DEPARTMENT:

To strive for excellence in Electronics and Communication Engineering education, research and technological services imparting quality training to students, to make them competent and motivated Engineers.

MISSION OF THE DEPARTMENT:

Department is committed to

- Impart quality engineering education in the areas of Electronics, Signal Processing, Embedded Systems and Communication Networks.
- Equip the students with professionalism and technical expertise to provide appropriate solutions to societal and industrial needs.
- Provide stimulating environment for continuously updated facilities to pursue research through creative thinking and team work.

ALUMINIUM ION BATTERY HITS 1000'S OF CYCLE FOR GRID STORAGE

Aluminium ion battery was invented by scientist Hongjie Dai in Stanford University. The main moto of inventing aluminium-ion battery is to overcome troubles over other batteries such as alkaline battery which is bad for environment, lithium ion battery which can occasionally burnt into flames.

Like most other batteries aluminium-ion battery avails metallic aluminium for anode and the three dimension graphite foam for cathode along with an ionic liquid electrolyte, this whole thing fits into flexible polymer coated pouch. This battery generates about two volts of electricity. While that's more than your everyday 1.5-volt AA and AAA batteries. But by "improving the cathode material could eventually increases the voltage and energy density".

Aluminium-ion battery can work without decay over 100's of cycle and even 1000's of cycle. This increases the performance of the battery. This is ultra-fast charging and crazy durable as most of the users expect. Unlike the hours some of us spend charging our phones, their prototype has a charge time of one minute. And it's able to withstand more than 7500

charge-discharge cycle without any loss of capacity. Not much expensive than any other battery used by the people. As well as offering safe alternative to many batteries used today. Initially this was not succeeded, mainly because of lack of suitable materials. Finally new type of graphite material was found to provide good performance.

The expectations over storage device by the populance involve inexpensive electrode, good safety, high speed charging, flexibility and long lifecycle. The aluminium-ion battery has these qualities. It is hard to imagine building huge lithium ion battery for grid storage. Whereas it is more feasible in Aluminium-ion batteries.



-A. HARITHA,

II ECE-A.

NATURE AN IDEAL TEACHER

Nature has a lot of qualities to inspire us. You don't need to be a graduate or an engineering student to learn life living qualities. All you need is just be a Nature lover. By just observing nature you could learn a lot to lead a successful life. Right from the star of the day, the sun you see, the air we breathe, the trees we admire all have certain qualities to inspire us.

The sun, it does not wait for others and always starts the day. It is always punctual and does its duty without any fail no matter what the condition is. It strives hard.

“If you want to shine like a sun, you have to burn like it”

Do you know, water lilies bloom in the midst of mud in dirty water? But they always seem fresh and fragrant despite all the dirt around them. Nothing can contaminate the vibrant beauty and the fragrance of a water lily. You can also shine and be good wherever you go and whatever the environment you are in be. Nothing can spoil your charm or your talents and wit if you are strong and stable with your own qualities and character. So, wherever you are, do not get perturbed by those unnecessary distractions and dirt. Just Be “You.”

Ever noticed an ant taking rest? They are always busy, walking, running, marching in a particular order. If they find sugar somewhere, you can see a very long train of ants marching tirelessly, carrying

those crystals above their head! They never go astray from that particular track. However huge their food particle is, they never lose their confidence, they even join hands with two or three other ants and carry them to their destination! Well, that's called “Team Work.”

And when they meet the other ants coming from the opposite direction, it looks like they talk to each other and walk even though they have a very busy schedule!!

Not only are they so brisk, energetic and hard-working, they always remain intact and follow an order and spend time with their fellow members! Isn't this something we all should follow in our life too??

Life's a hell, so is Flappy Bird. I couldn't count how many times my friends ranted about how hard it was to even pass the first pillar.

Even if you pass the first, the bird would hit the second as soon as you would enter. And then you'd gasp and scream and start all over again. That's the point. No matter what unexpected ways life hit us, drown us and burn us until we could hardly tolerate it, as long as the ashes are still there, we'll get our shit together and start all over again.

-N.BHUVANESHWAR RAM,

II ECE-B.

GRAPHENE TO REPLACE SILICON IN NEXT GENIC'S?

BILAYER GRAPHENE could replace silicon transistors in next generation electronic circuits, new research suggests. A team of UK scientists from the Science and Technology Facilities Council (STFC) took a sample of bilayer graphene in which two layers of graphene are placed one on top of the other, leaving a small band gap to encourage the transfer of energy between layers and fired ultra-short pump laser pulses to boost electrons into the conduction band. A second short, extreme ultraviolet, wavelength pulse then ejected electrons from the sample. These were collected and analysed to provide a snapshot of the energies and movement of the electrons. They proved that the sample behaves as a semiconductor and isn't short circuited by defects. The researchers believe in the research, in which graphene showed no defects, suggests that further technological effort should be carried out to minimize imperfections. There is a chance that the switch off performance of bilayer graphene can be boosted enough to challenge silicon based devices. Graphene transistors could make smaller, faster electronic chips than are achievable with silicon. Eventually more and more transistors could be placed onto a single microchip to produce faster, more powerful processors for use in electronic equipment.

ADVANTAGES OF GRAPHENE OVER SILICON:

There is a limit to how small silicon chips can be manufactured. According to Moore's law, which states that the number of transistors that fit onto an electronic doubles every two years, we will soon have to find an alternative to silicon. Because of graphene's miniscule size, it has the ability to replace silicon in the near future. Another major concern with using silicon chips is that they heat up quickly and cannot dissipate the heat. On the other hand graphene dissipates heat even faster than carbon. The only impasse that is faced when using graphene is the cost to produce.

-V. SAVEETHA,

II ECE-B.

HAPPINESS IS A STATE OF MIND

Like youth, happiness too is a state of mind. It is necessary the hand-maid of self and power nor that of pride and possessions. It is not something cogent or concrete that one can lay hands on, taste or smell. It is an inner experience, very close to the thrill of trance that comes about in a state of mental serenity and emotional equilibrium. The healthier the mind, the higher the level of ecstasy that one experiences. In their excessive exuberance, most people confuse happiness with physical pleasures or loud laughter.

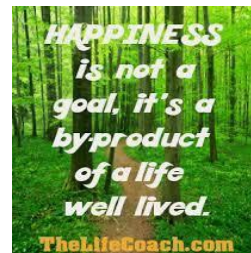
Mind travels faster than light and it requires a Herculean effort to bridle its multi-pronged movements if the aim is to enjoy some moments of happiness. In fact the halo of happiness in life does not come by accident. It is a creative content that has to be cultivated and cultured in the mind. It occupies such an important place in the human psyche that it can make a heaven of hell and vice versa.

Most of the ills of modern life like mental tensions and traumas, broken homes, violence, etc., originate from the cobweb of illusions that we weaves in our minds. The ever-escalating graph of our desires and demands play havoc, not only with the nervous system within, but also with the fragile eco-system outside. Since

mind is the womb of all images, whether worldly or spiritual, it is here the crux of happiness or unhappiness lies.

Happiness is the state of mind where the inclination of head and heart are in harmony and forces inimical to the tranquillity of mind are kept at bay. Such forces as the ascending ambitions and animated aspirations cause incalculable harm to the human mind and do not allow it to concentrate itself on constructive and creative expression. It is only when the mind is liberated from the bondage of material pursuits and egoistic obsessions, like conceit and pride, that one can inhale the fragrance of happiness.

Let us hasten and chisel and chasten the corrupted contours of mind, for it is the mind alone that is the abode of human intelligence and good health and happiness and harmony.



-G.NIVILAH JERISHMA,

III ECE-B.

TUNABLE LIQUID METAL ANTENNAS FOR TUNING IN TO ANYTHING

Tuning in is getting to be a complicated thing. The Internet of Things will need more microwave bands with shorter wavelengths. Cell phone already needs to be linked to GPS and Wi-Fi services on top of 4G and other cellular networks. And in the future, they'll likely also have to contend millimetre-wave bands for 5G services. All those need antennas of different lengths.

Such antennas have been developed in the past but with little success because they rely on pneumatic pumps for controlling the length in the capillary, making integration into electronics difficult.

Instead of external pumps, the NC State researchers used a voltage to control the amount of liquid metal allowed to flow into a capillary. It is discovered that a voltage across the interface of a liquid metal, such as an alloy of gallium and indium, combined with an electrolyte could cause the liquid metal to spread or to contract, depending on whether the voltage is positive or negative. A positive voltage causes the formation of an oxide layer on the metal, lowering the surface tension and allowing it to flow easily, while a negative voltage removes this oxide layer, causing the metal to contract, resisting flow.

The researchers used the electrochemical control of the fluidity of the liquid metal to coax it into and out of a capillary. Their setup resembled a fever thermometer, where the length of the mercury column in a capillary is controlled by the thermal expansion of the mercury in a reservoir connected to the capillary. But instead of temperature, the engineers used voltage.

For centimetre-wavelengths, liquid metal antennas would remain separate elements in the circuitry, but for millimetre waves they could be integrated on microfluidic chips. However even larger liquid metal antennas could be useful in defence communications and radar systems that use bands ranging from a few megahertz to tens of gigahertz.

-T.KANAGARATHNA VELU,

III ECE-A.

BUSINESS OBJECTIVES

Business objectives refer to goals that an organization aspires to accomplish over a specific period of time. In other words, business objectives can be defined as specific statements that contain projections about the growth and development of an organization. These objectives serve as the basis for all strategic and operational policies adopted by an organization.

In addition, they provide an insight into the existing position of an organization and scope of improvement in the current method of working. Business objectives differ from organization to organization depending upon its size, resources, number of customers served, and financial status. The business objectives of organizations should be quantitative, comprehensible, time-specific, and realistic.

The primary business objective of all organizations is to earn profit. In general terms, profit is considered as an amount of money that is left over from sales revenue after deducting all expenses. An organization needs to earn profit to ensure its long-term survival, growth, and expansion over time.

However, some organizations indulge in malpractices, such as hoarding and black-marketing, to maximize their

profit. Such unethical practices can bring high profits for an organization in the short run, but may adversely affect the organization's reputation in the long term. Therefore, an organization should aim to earn reasonable profits, so that it can cover various economic risks and avoid losses.

Besides earning profit, economists have also suggested various alternative objectives that an organization needs to achieve for its growth and survival. These alternative objectives include sales revenue maximization, growth rate maximization, increase in market share, and avoidance of risks.

**-U.KANDHAR VISHNU,
III ECE-A.**

JOB MENTOR

We all know that every time there is a recession, some jobs go away. Is there a pattern to that? Economists have discovered a pattern that helps us predict what kind of jobs will go away. The one line summary would be: Jobs involving routine work are going to go away. They will be outsourced and more likely automated.

Job growth since 2001 has largely come from “Non-Routine” work. Routine work related job creation has dropped. Routine Jobs Are Disappearing

Routine tasks are “rule based,” in that they can be performed by following a well-defined set of instructions, and require minimal discretion. Routine jobs can be manual (e.g. forklift driver, farm labor etc.) or they can involve cognitive skills. Some routine jobs are also cognitive. These include secretaries, bookkeeping/filing clerks, mail sorters and bank tellers.

Some of the jobs will become redundant and disappear. Technology has substituted a large no of bank tellers with ATMs, travel agents with travel websites. Every time there is a recession, the routine

jobs get automated.

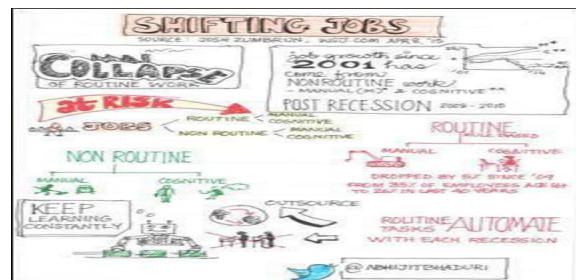
Car ownership can be individual or shared. They can be driven by human or robots. These combinations have led to analysts predicting that the \$10 trillion auto industry is in for a huge disruption.

Non-Routine Tasks Are the Future

They require flexibility (either cerebral or physical), and involve a variety of tasks. They also tend to emphasize greater degrees of human interaction, communication, or discretion. Such tasks require constant reskilling and depend a lot on soft skills. Keep a chunk of time every day to read and improve your skills in influencing others.

-S.ROHITHA,

III ECE-B.



MEDICAL MICROCHIPPING IS REAL

A cohort of scientists from universities world over has developed a new type of implantable microchip capable of performing various pre-programmed functions inside the body for a certain period of time, and later dissolving into oblivion.

A new study on the technology explains how "transient electronics" are the exact opposite of traditional electronics, which are designed with stability and long-term durability in mind. Dissolvable electronics, on the other hand, are specifically designed to melt away once they have accomplished their respective tasks.

A remarkable feature of modern silicon electronics is its ability to remain physically invariant, almost indefinitely for practical purposes. Although this characteristic is a hallmark of applications of integrated circuits that exist today, there might be opportunities for systems that offer the opposite behavior, such as implantable devices that function for medically useful time frames but then

completely disappear via re-absorption.

One example of this might be implantable chips designed to target open wounds with heat in order to prevent infection, particularly during patients' time at hospitals. Another use might perhaps be to trigger an immune response that targets a potentially deadly infection, seeing as how conventional medicine has largely rejected the much more effective holistic and nutrition-based approaches to preventing and treating disease.

According to reports, test chips have already been created that are composed of a combination of silicon and magnesium oxide, and coated in a protective layer of silk produced by extracting silk from silkworms, dissolving it, and reforming it into a crystallized coating. Depending on the intended lifespan of a particular chip, the thickness of the silk might be extremely thin to last for just a few hours, or slightly thicker to last for days or even weeks.

-A.S.AJAY KUMAR,

III ECE-A.

“People say "Bless you" when you sneeze because when you sneeze, your heart stops for a mili-second”

THE MOON

She is so gentle and clear
With the stars twinkling dear
And makes the sky a wonder sight
All through the creeping dark night.

I am the one who awaits her
All day she keeps me keen
To look at her beautiful face
At which I will never stop to gaze

She lends me her light
So that I don't have to fight
With darkness at my heels
To my welcoming delicious meal.

She sometimes disappears
Into the cloud surrounding the near,
And I always wish
I could see her when I eat my fish!

She smiles at me and gives me company
When I am sad, dull and lonely
She is the one who makes me forget my
worries

For she helps the mother earth at the dark
night

With her glittering rays of light

I always waited at noon

To see the round jolly moon!!!!



-C.SARAVANA RAJ,

III ECE-B.

AIR INTO WATER

Jonathan Ritchie has invented the Watermill, which is an atmospheric water generator. It converts air into fresh water.

This latest technology invention produces fresh water at a cost of about 3 cents a litre (1 quart). Originally designed for areas that do not have clean drinking water, the Watermill is for households that prefer an eco-friendly, cost effective alternative to bottled water.

Atmospheric water generators convert air into water when the temperature of the air becomes saturated with enough water vapour that it begins to condense (dew point).



"What is unique about the Watermill is that it has intelligence," says Ritchie. This makes the appliance more efficient. It samples the air every 3 minutes to determine the most efficient time to convert the air into water. It will also tell you when to change the carbon filter and will shut itself off if it cannot make pure clean water.

-K.JAYA PRAKASH

II ECE-A.

DIGITAL PEN

A digital pen is one of the new electronic inventions that can help us record information.

Despite the digital age, we still use pens. But it would be great to have our handwritten notes and drawings digitally recorded without having to use a scanner.

The Zpen from Dane-Elec is a wireless pen that uses a clip-on receiver to digitally record what you write.



It uploads the information to your computer where it can be viewed, edited and filed as a word processing document. The digital pen utilizes character recognition software and works by recording movement. Features include profile creation, a dictionary and fifteen language options.

-K.BOOBALA KRISHNAN

III ECE-B.

TRANSPARENT SMARTPHONES

Inventors, Jung Won Seo, Jae-Woo Park, Keong Su Lim, Ji-Hwan Yang and Sang Jung Kang, who are scientists at the Korean Advanced Institute of Science and Technology, have created the world's first transparent computer chip.



The chip, known as (TRRAM) or transparent resistive random access memory, is similar to existing chips known as (CMOS) or metal-oxide semiconductor memory, which we use in new electronics.

The difference is that TRRAM is completely clear and transparent. What is the benefit of having transparency?

"It is a new milestone of transparent electronic systems," says Jung Won Seo. "By integrating TRRAM with other transparent electronic components, we can create total see-through embedded electronic systems."

The technology could enable the windows or mirrors in your home to be used as computer monitors and television screens. This technology is expected to be available within 3 to 4 years.

-K. MEENACHI,

III ECE-B.

INSTANT PRINTS

Creating instant prints from a digital camera is one of the new electronic inventions in printing. The Polaroid PoGo™ is a small portable printer that weighs only a few ounces.

The printer produces full color 2" x 3" prints using an "inkless" technology. The images are created from heat activated crystals in the photo paper. The photos are water proof, tear proof and smear proof.



This new electronic invention connects to a digital camera using a USB cable, or to a mobile phone through wireless Bluetooth. It uses rechargeable batteries or an AC adapter.

-M. KUNGUMA AGALYA

II ECE-A.

HOLLOW FLASHLIGHT

A free energy device that is powered by the heat in your hand.

While visiting the Philippines, Ann the scientist found that many students couldn't study at home because they didn't have electricity for lighting.

Unfortunately, this is a common problem for developing regions where people don't have access to power grids or can't afford the cost of electricity.

Ann recalled reading how the human body had enough energy to power a 100-watt light bulb.

This inspired her to think of how she could convert body heat directly into electricity to power a flashlight. She knew that heated conductive material causes electrons to spread outwards and that cold conductive material causes electrons to condense inwards.

So, if a ceramic tile is heated, and it's pressed against a ceramic tile that is cool, then electrons will move from the hot tile towards the cool tile producing a current.

This phenomenon is known as the thermoelectric effect.

Ann started using ceramic tiles placed on top of each other with a conductive circuit between them (known as Peltier tiles) to create the amount of electricity she needed for her flashlight.

Her idea was to design her flashlight so that when it was gripped in your hand, your palm would come in

contact with the topside of the tiles and start heating them.

To ensure the underside of the tiles would be cooler, she had the tiles mounted into a cut-out area of a hollow aluminium tube.

This meant that air in the tube would keep the underside of her tiles cooler than the heated topside of the tiles. This would then generate a current from the hot side to the cold side so that light emitting diodes (LEDS) connected to the tiles would light-up.

But although the tiles generated the necessary wattage (5.7 milliwatts), Ann discovered that the voltage wasn't enough. So she added a transformer to boost the voltage to 5V, which was more than enough to make her flashlight work.

She told judges at the Google competition that her first toy was a box of transistors.

She is working on bringing her flashlight to market and is also developing a headlamp based on the same technology.



-G. B. NIVVEDA,

III ECE-B.

SMARTBOX TECHNOLOGY

Insurance companies are implementing smartbox technology so good drivers can benefit from cheap insurance rates.

The smartbox, similar to a black box for airplanes, records details about how your car is driven, which can result in cheap car insurance for responsible drivers.

The device is connected to the electronics in your car and collects wide criteria of information such as time, speed, braking, cornering, acceleration and location.

The smartbox data is wireless transferred in real time to the insurance company and provides a profile of when, where and how you drive. This profile is then used to compare insurance rates and to reward low-risk driving behaviour with cheap insurance rates.

Drivers are high-risk when they drive irresponsibly such as speeding, frequent lane changing, driving in high-risk locations or at high-risk times such as in heavy traffic or late at night.

These new electronic inventions are intended to replace the standard practice of categorizing drivers into group

behaviour to determine insurance coverage and premium payments.

For example, young drivers are more likely to drive fast, drive at night, and use a cell phone while driving. Statistically, young drivers are more likely to cause an accident so insurance companies charge them higher rates to cover the costs of accident claims.

So even if you're a young, responsible driver, you will pay high insurance rates because of group behaviour.

This technology allows you to provide proof that your driving behaviour doesn't fit the pattern of your demographic group.

All the information collected about your driving can be viewed online - including what you're doing well and what could be improved. Your insurance premium is then calculated according to your driving profile.



-S. G. KARTHIK

II ECE-A.

ELECTRONIC PILLS - COLLECTING DATA INSIDE THE BODY

After years of investment and development, wireless devices contained in swallowable capsules are now reaching the market.

Companies such as Smart Pill based in Buffalo, New York and Israel-based Given Imaging (PillCam) market capsules the size of vitamin tablets.

These pills contain sensors or tiny cameras that collect information as they travel through the gastrointestinal tract before being excreted from the body a day or two later.

These new electronic inventions transmit information such as acidity, pressure and temperature levels or images of the oesophagus and intestine to your doctor's computer for analysis.

Doctors often use invasive methods such as catheters, endoscopic instruments or radioisotopes for collecting information about the digestive tract. So device companies have been developing easier, less intrusive ways, to gather information.

Digestive diseases and disorders can include symptoms such as acid reflux, bloating, heartburn, abdominal pain, constipation, difficulty swallowing or loss of appetite.

"One of the main challenges is determining just what is happening in the

stomach and intestines." says Dr. Anish A. Sheth, Director of the Gastrointestinal Motility Program at Yale-New Haven Hospital.

Doctors can inspect the colon and peer into the stomach using endoscopic instruments. But some areas cannot be easily viewed, and finding out how muscles are working can be difficult.

Electronic pills are being used to measure muscle contraction, ease of passage and other factors to reveal information unavailable in the past.



-G. RAGULAN,

III ECE-B.

MILITARY MIND CONTROL

The helmet used by the U.S. military has changed dramatically over the years. In World War I, the M1917/M1917A1 helmets, also known as "Doughboy" or "dishpan" helmets, protected the heads of American infantrymen. They were replaced in 1941 by the M-1 "steel pot," the standard-issue helmet in World War II, the Korean conflict and throughout the Vietnam War. By the 1980s, U.S. military helmets had evolved into a one-piece structure composed of multiple layers of Kevlar 29 ballistic fibre.

The helmet of the near future, however, may contain something more than extra protection from flying shrapnel. An Arizona State University researcher, working under a grant from the U.S. Defence Advanced Research Projects Agency (DARPA), is trying to develop a military helmet equipped with technology to regulate soldiers' brains. The technology is **transcranial pulsed ultrasound**, which delivers high-frequency sound waves to specific regions of the brain. Under the influence of these sound waves, neurons send impulses to their targets, exerting control over them. On the battlefield, this has enormous implications. Using a controller, a soldier could release

ultrasound pulses to stimulate different areas of the brain. For example, he or she might want to be more alert after being awake for many hours or relax when it's time to catch some shuteye. The soldier might even be able to relieve stress or become oblivious to pain, eliminating the need for morphine and other narcotics.

Of course, some people think this type of neurotechnology is pure science fiction. Others worry that Uncle Sam is trying to take over the minds of its soldiers. After all, it's one thing to have a drill sergeant yelling in your ear. It's another thing completely to have one inside your head.



-B. ASHWIN DEEPAK,

III ECE-A.

“A crocodile can't move its tongue and cannot chew. Its digestive juices are so strong that it can digest a steel nail”

PENCIL PUSHER

U.S. businesses use about 21 million tons (19 million metric tons) of paper every year -- 175 pounds of paper for each American, according to the Clean Air Council. This has led to office recycling programs, "please think before you print" e-mail signatures and printers that offer double-sided printing. Now a trio of Chinese inventors hopes to add another device to the cubicle environment: the **P&P Office Waste Paper Processor**, which turns paper destined for recycling into pencils. The machine, looking a bit like a three-hole punch crossed with an electric pencil sharpener, was a finalist in the 2010 Lite-On Awards, an international competition that seeks to stimulate and nurture innovation.

Here's how the pencil-making gadget works: You insert wastepaper into a feed slot. The machine draws the paper in, rolls and compresses it, and then inserts a piece of lead from a storage chamber located in the top of the device. A small amount of glue is added before -- voilà -- a pencil slides out from a hole on the side. It's not clear how many pieces of paper form a single pencil, but you figure the average office worker could generate a decent supply of pencils in a month.

And that seems to be the biggest drawback to the pencil-producing gadget. How many No. 2 pencils can an office really use, given that most workers take notes on their tablet PCs or laptops? And how much glue and lead core do you need to buy to keep up with the overflowing paper recycle bin? Too much, we would suspect, which is why you may never see this gadget in your office supplies catalogue.



-T.JANANI

II ECE-B.

“In a study of 200,000 ostriches over a period of 80 years, no one reported a single case where an ostrich buried its head in the sand”

PERPETUAL PRINTING

Printing has come a long way since the computer landed on the desktop. First, there were daisy-wheel printers, then dot-matrix printers, then inkjet and laser printers. The problem with all of these output devices, of course, is that they require paper -- lots of it -- and expensive consumables, like toner. Why can't someone invent an inkless, tonerless printer that allows the operator to reuse paper?

As it turns out, this isn't a new idea. Xerox has been working with so-called electronic paper since the 1970s. Its most promising solution is a type of paper called "Gyricon." A Gyricon sheet is a thin layer of transparent plastic containing millions of small oil-filled cavities. A two-colored bead is free to rotate inside each cavity. When a printer applies a voltage to the surface of the sheet, the beads rotate to present one colored side to the viewer, offering the ability to create text or pictures. The images will remain on the paper until it's fed through the printer once again.

A Japanese company, Sanwa Newtec, is offering its version of inkless, tonerless and rewritable printing technology. Its product is called the **PrePeat rewritable printer**, which, like the Xerox solution, requires plastic paper. But PrePeat uses a different

technique to produce an image. Each sheet of paper comes embedded with leuco dyes, which change colour with temperature -- colored when cool and clear when hot. The PrePeat printer, then, heats and cools the paper to first erase an image and then create a new image in its place. According to the company, a single sheet of paper can be reused 1,000 times before it needs to be replaced.

What's the catch? A single PrePeat printer costs almost \$6,000, while a pack of 1,000 sheets of paper costs more than \$3,300. If you're running a printing-intensive business, you might be able to recoup your investment over time. But the average PC user likely won't be willing to shell out that kind of money to replace a standard printer



-G.KEERTHANA DEVI,

II ECE-A.

INSECT ASSAILANTS

Many people don't know it, but USPTO can apply a secrecy order to a patent if patent office staff and their military advisers think the idea could be used to threaten national security. Once the USPTO decides that a technology is no longer a threat, it can publish the patent and pave the way for commercialization. Some patents may remain cloaked under a secrecy order for one or two years; others languish for decades. More than 5,000 patents -- inventions we may never know or see -- currently have secrecy orders attached to them.

That's not the end of hush-hush inventions. Each year, the Pentagon sets aside billions of dollars to develop top-secret military weapons. This so-called "black budget" has grown tremendously since the Sept. 11 attacks, surpassing even the funds spent at the height of the Cold War. Some of that money has gone toward the development of **Nano air vehicles** (NAVs), remote-controlled micro-drones that could easily infiltrate enemy territory. We all know how the U.S. military has used larger drones to conduct reconnaissance, transport supplies and even target individuals. Unfortunately, the larger attack drones, such as the MQ-1 Predator, can result in unwanted civilian casualties.

Lockheed Martin's Samarai **micro-drone** could solve that problem. Weighing

a mere 5.29 ounces (150 grams) and boasting a 12-inch (30-centimeter) wingspan, the Samarai looks like a maple-seed whirligig, except this one comes with a miniature jet engine to provide thrust and a tiny flap on the trailing edge of the wing to control direction. In the near future, this nature-inspired micro-drone will snap photos using a camera mounted on the gadget's central hub. But the longer-term goals are to turn the Samarai or other similar micro-drones into armed attack vehicles capable of killing a single individual with little or no collateral damage.



-K.AISHWARYA,

II ECE-A.

SEED RACER

Mercedes-Benz has been an innovator for decades. You can thank the German auto manufacturer for diesel and supercharged engines on passenger cars, antilock brakes, electronic stability systems and more. But nothing could be more innovative than the **BIOME concept car**, unveiled at the Los Angeles Auto Show in November 2010. Here's how the official press release described the vehicle: "The Mercedes-Benz BIOME grows in a completely organic environment from seeds sown in a nursery. Out on the road the car emits pure oxygen, and at the end of its lifespan it can be simply composted or used as building material."

Engineers from the Mercedes-Benz Advanced Design Studios in Carlsbad, Calif., created the car as part of the Los Angeles Design Challenge, which called for a safe and comfortable compact car of the future that could accommodate four passengers, demonstrate good handling and weigh only 1,000 pounds (454 kilograms). The BIOME represents the Mercedes-Benz vision. It is made from an ultra-light material called Bio Fibre so that the finished vehicle, though wider than a typical car, only weighs 876 pounds (397 kilograms). If you think that sounds too

good to be true, then get this: The BIOME isn't assembled. It grows from two seeds -- one that forms the interior and one that forms the exterior. The wheels germinate from four additional seeds placed in the nursery.

Of course, you won't find the BIOME at your local Mercedes-Benz dealer. That's because the far-out design is a vision of the future -- a concept car that's decades ahead of its time. As such, it couldn't exist today. But it might be as common as a Corolla after 20 or 30 years of innovative thinking and inspired engineering



-T.VASANTH KUMAR,

IV ECE-B.

“Wearing headphones for just an hour will increase the bacteria in your ear by 700 times”

BODY ARMOR WITH BUILT-IN STUN GUN, FLASHLIGHT AND CAMERAPHONE CHARGER

The Armstar Bodyguard 9XI-HD01 looks a bit like that scary black body armor that Christian Bale wears in the recent Batman movies. And it is kind of like that, actually.

The Bodyguard, which was patented by a California inventor in 2007 under the title of "wearable shield and self-defence device," is designed to be a shield, a non-lethal weapon and a communications device all in one. The flexible arm, which is armored with Kevlar and hard plastic, contains a rechargeable lithium battery pack that powers an "electronic deterrent" device built into the arm's artificial skin. All the user has to do is pull a pin, and an assailant who grabs his or her arm is going to get zapped with electricity. The Bodyguard is also equipped with a bright LED flashlight, an HD camera capable of transmitting pictures, and a charging slot into which an iPhone apparently fits nicely.

We could see this gadget becoming an indispensable tool for law enforcement officers and bodyguards of the future, but given that you have to inquire about it to get a price quote, we're guessing that it'll be too costly to make much of a dent into the everyday suburban adventurer market

-V.SABARISH KUMARAN,

IV ECE-B.

CLEAN WATER

The tragic loss of lives from the lack of safe drinking water in the aftermath of the tsunami in Indonesia and the hurricane in Louisiana, motivated inventor Micheal Pritchard to find a solution.

After developing many prototypes, he designed an innovative handheld water purification device that creates fresh water instantly.



The LifeSaver bottle removes bacteria, viruses, parasites, fungi and all microbiological pathogens from contaminated water without the use of chemicals and lasts for years with very little maintenance. Accepted for use by military forces, Lifesaver has also received a technological development award for green inventions.

-V.RAMYA,

II ECE-B.

BAT SUIT

Have you ever wanted to leave the ground and soar like a bird -- or perhaps a bat? In January 2012, a Connecticut-based inventor was granted a patent for what the application describes as "a completely dynamic human powered flying suit" that is modelled after the bat's style of aviation. The inventor explains in the patent application that bats are fellow mammals and the flying creatures "most closely related to human beings."

The device consists of a pair of strap-on bat like wings with rigid and non-rigid portions that can be manipulated by the wearer once aloft. Initially getting off the ground is a bit trickier: Unlike bats, which simply do what comes naturally, the wearer of the flying suit would have to be towed, or ride on a bicycle, skis or rollerblades down an incline and then assume a leaning-forward flying posture and leap into the air at the appropriate moment



-A.KANAGA DHURGA,

IV ECE-A.

“In the Durango desert, in Mexico, there's a creepy spot called the "Zone of Silence." You can't pick up clear TV or radio signals. And locals say fireballs sometimes appear in the sky”

PORTABLE CAT-TOY PARK

Comedian Steve Martin used to have a routine in which his pet cat figures out how to imitate his voice and orders \$3,000 worth of cat toys from a mail-order company. The bit certainly resonated with cat owners, who know how easily felines can get into mischief when they're trying to alleviate boredom. In 2009, a New York-based inventor was granted a patent for one possible solution: a fold-up "cat toy park" equipped with a scratching post, a tunnel for crawling through, a hanging chew toy, and most ingeniously, a tube equipped with a fan that blows colored balls around a mesh tube, a game that's "devised to occupy one or more cats"

While cat fanciers may applaud the ingenuity of the concept, cats are notoriously fussy and capricious, and there's no guarantee they would choose to play with such a toy rather than, say, claw your antique furniture. Also, the value of having a portable cat entertainment centre is questionable, since we've never seen a cat who was a willing traveller.



-P. K. VANMEEGANATHAN,

IV ECE-B.

LICENSE PLATE FLIPPER

Remember James Bond's tricked-out Aston Martin in the 1964 movie "Gold finger" -- the one equipped with hidden machine guns, pop-out razor rims to slice pursuer's tires and an ejector seat? Wouldn't you love to outfit your Toyota Yaris with some of that stuff?

The high-powered weaponry, alas, probably is a bit impractical, not to mention dangerous. But there is a company that offers an electronic license-plate flipper of the sort that Bond used to conceal his identity from prying eyes. The \$79.00 Vehicle Plate Flipper doesn't allow you to impersonate a Swiss or French driver, but it does flip down at a 90 degree angle at the press of a button to display a message on an underlying plate for the driver behind you. There's also a special \$74.99 version for motorcycles.

We're not sure that this gadget will ever become widely popular, though, in part because some of the device's conceivable uses -- hiding your identity from red light cameras and police, or provoking tailgaters with taunting

messages -- could get drivers in a lot of trouble. Indeed, the company that sells the device attaches a disclaimer to its Web site, warning that the gadgets are "STRICTLY intended for off-road use only" and informing potential customers that they take responsibility "for all liabilities associated with the use or misuse of our product"



-C.MADHU SHREE,

IV ECE-A.

“Gopher snakes in Arizona are not poisonous, but when frightened they may hiss and shake their tails like rattlesnakes”

ROBOT THAT DEVOURS INSECTS AND RODENTS

At this point, robotic vacuum sweepers, singing androids and mechanical dogs are old hat. But British inventors Jimmy Loizeau and James Auger have made a quantum leap with the Carnivorous Domestic Entertainment Robot, an automaton that would stalk and devour mice and insects, and then eat them and digest their bodies to produce its own power.

They've come up with five different concepts, including the mousetrap coffee table robot, which is designed to lure unwary vermin onto its surface, which contains a trap door triggered by motion sensors. Rodent victims trapped by the device would be chemically dismantled and fed to a microbial fuel cell. A light on the side of the device would inform the owner of how much energy is being produced by the auto-extermination. Other configurations include the Lampshade Robot, which would lure flies and moths to their doom, a Cobweb Robot that would trick spiders into weaving webs and then extract and feed them into its fuel cell, and the Flypaper Robotic Clock



-S. STALIN BALRAJ,

IV ECE-B.

“A person can live without food for about a month, but only about a week without water. If the amount of water in your body is reduced by just 1%, you'll feel thirsty. If it's reduced by 10%, you'll die”

FLYING ROBOTS

This cool invention is a flying robot that imitates a bird. It takes off, lands and flies like a real bird.

This flying robot has a two-meter wingspan, and a lightweight (450 gram) carbon-fibre skeleton body.



It uses hybrid drive technology to simulate the flying characteristics of the Herring Gull. The design imitates the construction and the motion of the wings during flight.

Birds have a down-stroke and a characteristic up-stroke of their wings, but they also twist to change angles for manoeuvrability and directional control.

The Smart Bird mimics this capability by using a flexible articulated torsion drive that allows the robot to autonomously twist for maximum flight efficiency - just like real birds.

This technical adaptation is quite an accomplishment in aerodynamic engineering. The project also provided innovated research into material construction and energy consumption efficiency.

-S. PIRITHIVI,

IV ECE-B.

“At a jet plane's speed of 1,000 km (620mi) per hour, the length of the plane becomes one atom shorter than its original length”

MILITARY ROBOTS

For decades the Marine Corps in Bridgeport, California has taught soldiers how to handle and use mules.



Mules have been used in practically every military engagement since the Civil War and most recently in Afghanistan. A mule's ability to carry equipment and supplies is legendary.

It has the size and agility of a horse but is stronger, has untiring stamina, and requires less food. A mule can carry four hundred pounds (181 kgs) of gear, seven hours a day, for three weeks, through rough terrain.

The military refers to mules as a "force multiplier" because they can triple the effectiveness of a troop by reducing the weight carried by soldiers. Less weight means less physical strain and fatigue.

Over the years, the military has relied less on mules and more on Jeeps and Humvees but these vehicles can't be used

in rugged mountainous regions like Afghanistan.

Mules are still used in these areas to carry everything from anti-tank rockets and anti-aircraft missiles to body armor, boots and bullets. But mules can get sick and they require trained handlers.

So DARPA (Defence Advanced Research Project Agency) contracted the robotics design company, Boston Dynamics, to develop a military robot to replace the mule.

The Legged Squad Support System (LS3) is intended to carry supplies through the same terrain as ground troops - just like mules.

The LS3 is capable of interacting with humans and can understand verbal and visual commands. The four-legged robot can lie down, stand up, walk or run.

-S.HARITHA,

II ECE-B.

“Cats sleep up to eighteen hours a day, but never quite as deep as humans. Instead, they fall asleep quickly and wake up intermittently to check to see if their environment is still safe”

NANO HUMMINGBIRD

Nanotechnology has created some cool inventions and this Nano robot is one of them.



It was recently recognized by Time Magazine as one of the best inventions of 2011.

These types of robots are often funded as military robots for unmanned aerial vehicle research. The Nano Hummingbird was developed for the Nano Air Vehicle Program of the Defence Advanced Research Projects Agency (DARPA).

The objective of this project was to model the flight characteristics of a hummingbird because of its precision flying and hovering capabilities.

This robot flies in any direction, hovers, and can turn on its own axis, which makes it ideal for entering and maneuvering within buildings.

It has a 6.5 inch (16.5 cm) wingspan, a flight speed of 11 mph (18 km/h) and a flight time of about 20 minutes.

The propulsion and control systems are embedded in the wings. It also carries a battery, transmitter and a colour video camera. Amazingly, the whole thing weights less than an AA battery (19.5 grams).

-J. SAMUEL LAWRENCE,

II ECE-A.

“The wick of a trick candle has small amounts of magnesium in them. When you light the candle, you are also lighting the magnesium. When someone tries to blow out the flame, the magnesium inside the wick continues to burn and, in just a split second (or two or three), relights the wick”

RECYCLING PAPER

Sawa Hiroshi is an engineer employed by the Oriental Development Company in Japan to develop green inventions.

"Global warming is a serious environmental problem and we wanted to develop an eco-friendly recycling product," says the 37 year-old inventor.



"We wanted zero-emissions and something that was economical and would contribute to conservation."

Funded by Oriental Development and Sanko Electronics, Sawa focused his efforts on an invention that would recycle waste paper. He invented a small-scale recycling machine that converts waste paper into toilet paper.

Paper is thrown into a hopper and the machine untangles shreds and uses hot water to dissolve the paper into a pulp.

The machine then automatically adjusts the consistency of the pulp, removes any foreign particles, dries and compresses it into sheets and rolls it into toilet paper that exits out the other end.

It takes about 30 minutes to make a roll and each one is made with the equivalent of 40 sheets of standard size office paper.



Over a period of a year the machine would save about 60 cedar trees.

This green invention, affectionately named the "White Goat", has already won awards for innovation and is expected to be available for distribution later this year.

-G. MUKESH KUMAR,

III ECE-B.

“A ball of glass will bounce higher than a ball of rubber. A ball of solid steel will bounce higher than one made entirely of glass”

VERTICAL FARMING

Vertical farming is an eco-friendly architectural concept for cultivating food within skyscrapers.

It uses green inventions and green technologies related to hydroponics, aeroponics and aqua-farming to economically produce food for personal and communal consumption.

It is estimated that over the next four decades, our population will increase by 3 billion people and that 80% of us will be living in cities.

Many scientists are concerned that the amount of land required to feed us in the future will not be available nor will it be economically or environmentally sustainable.

Currently, the amount of land required to produce food for 6.8 billion people on earth is equivalent to the continent of South America. In four decades, we will require an additional 2 billion acres for cultivating food. But that much arable land doesn't exist.

Global warming and geological events will continue to create extreme weather conditions causing frost, floods, droughts, hailstorms, wildfires and torrential rainfalls that will severely effect the economics and sustainability of our food supply.

India has the world's second largest population and is experiencing extreme changes in temperatures and rainfall patterns.



It is predicted that within this century, India will lose 30% of it's agricultural production. So as the population increases, scientists are wondering - "Where are we going to get food?"

Dickson Despommier, a microbiologist, is credited with popularizing the concept of vertical farming.

The idea originated from an assignment given to his students to determine how 2 million inhabitants of Manhattan could be fed from crops produced on 13 acres of rooftop gardens. It was discovered that only 2% of the population could be fed from these gardens so vertical farming became an alternative solution.

Vertical farming stacks and grows plants "vertically" in skyscrapers and uses mineral enriched water instead of soil. It also uses the recycling concept of aquaponics where fish are cultivated in tanks and their waste provides nutrients for edible plants.

-A.PRIYA DARSHINI,

III ECE-B.

FRIENDSHIP OR FRIEND REQUEST

I have a long, long list of “friends”. Every person I meet invariably has a Facebook account. Either I’m sent a “friend request”, which I have to accept so as not to hurt the sender, or I force myself to send a “request”. But I felt later that in reality we never request or accept friendships openly. In fact the beauty of real friendship is that it is involuntary, unconscious, without needing any visible effort. Friendship doesn’t need any explicit branding. A classmate shouldn’t be called a classmate because it sounds unemotional and cold. Nobody cares to understand that I call her a classmate precisely because she isn’t my friend and I know virtually nothing about her.

Successful people have very few friends and lots of acquaintances. They are being truthful to both their friends and their acquaintances about the nature of relationship. In fact the most successful wizard, Voldymort, had no friends but only followers. Eventually he was defeated by Harrypoter, who had lots of friends. But in this debauched, real world, the Voldymorts win while the Harrys don’t even get Hogwarts call letter.

-R.REVATHI,

III ECE-B.

“According to security equipment specialists, security systems that utilize motion detectors won't function properly if walls and floors are too hot. When an infrared beam is used in a motion detector, it will pick up a person's body temperature of 98.6 degrees compared to the cooler walls and floor.

If the room is too hot, the motion detector won't register a change in the radiated heat of that person's body when it enters the room and breaks the infrared beam. Your home's safety might be compromised if you turn your air conditioning off or set the thermostat too high while on summer vacation.”

ART WORKS



G.NIVILAH JERISHMA

III ECE-B



T.INDHUMATHI

III ECE-A

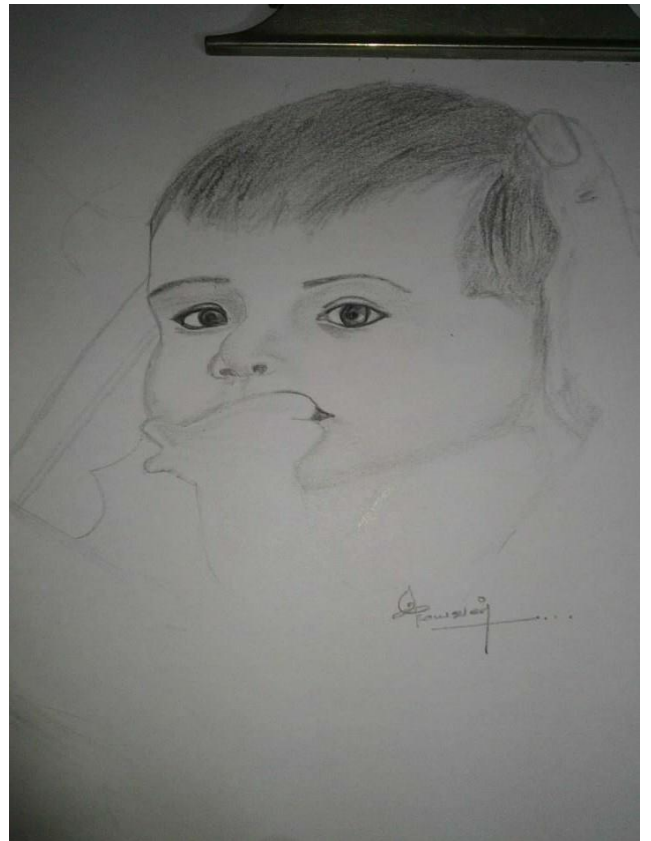


S.AISHWARYA, II ECE- A



S.ROHITHA

III ECE-B



B.L. IMAYAVAL

II ECE



GANAGA RAJESH, I ECE- B



G.KEERTHANA DEVI

II ECE-A



GANAGA RAJESH

I ECE-B

SPECTRUM ACTIVITIES

S.No	Date	Event
1	31.08.2014	Inauguration of Association followed by a Guest Lecture on “Recent trends in Wireless Technologies” by Mr. V Dasarathan, RF consultant, Linx Technologies, USA
2	09.09.2014	Guest lecture on “Higher studies at IIMs” by Mr.A. Mandrachalam, Post graduate scholar, IIM, Lucknow.
3	31.10.2014	Paper presentation for Pre final year students
4.	09.01.2015	Technical Quiz “ TECHNOQUIZ” for 2 nd year students
5.	24.02.2015	Guest lecture on “Robotics and Industrial Automation by Mr.Swaminathamaran, md, Arobot, Chennai.
6.	13.03.2015 14.03.2015	Technical Symposium “TECHSYM 2015”
7.	18.04.2015	Guest lecture on “ Industries requirements from Engineers” by Mr.John Kennedy, MD, CIRCA Equipments, Chennai.

LIST OF STUDENTS PLACED

NO	NAME	COMPANY	ROLL NO
1	S.GOKILAVANI	SOLITON TECHNOLOGIES LTD	11BEC020
2	M.K.SETHUPATHY	ROBERT BOSCH	12BEC322
3	R.VINIBA	ROBERT BOSCH	11BEC113
4	K.SANTHOSH KUMAR	ROBERT BOSCH	12BEC317
5	A.B.VIVEK SAKTHI	ROBERT BOSCH	11BEC116
6	ARUN PRASATH SELVARAJ	INFOSYS	11BEC008
7	ANBUKANNAN V	INFOSYS	11BEC003
8	KELVIN VICTOR VICTOR.J.	INFOSYS	11BEC046
9	KARTHIK. S	INFOSYS	11BEC036
10	SUJITH HITHESHWARAN .J	INFOSYS	11BEC101
11	VASANTH KUMAR.T	INFOSYS	12BEC326
12	SHILPA .I	INFOSYS	11BEC090
13	BARANI DHARAN .N	INFOSYS	11BEC011
14	SHRITHANGAM .P	INFOSYS	11BEC091
15	HEMALAKSHMI .R	INFOSYS	11BEC030
16	SIBI KRISHNA .V.	INFOSYS	11BEC093
17	BALAJI. J	INFOSYS	11BEC010
18	CHRISTY QUINTUS T	INFOSYS	11BEC015
19	VANMEEGANATHAN .P.K	INFOSYS	11BEC109
20	PRIYAVARSHINI .S	INFOSYS	11BEC068
21	MUJAMIL .M	INFOSYS	11BEC056
22	KAYATHRI DEVI. K	INFOSYS	11BEC045
23	MEIYAZHAGAN .P	INFOSYS	11BEC053
24	MONIKA .V	INFOSYS	11BEC055
25	KAYALVIZHI .G	INFOSYS	11BEC044
26	SUBHA .N	INFOSYS	11BEC099
27	SUDHA .R	INFOSYS	11BEC100
28	SANTHINE .S	INFOSYS	11BEC079

29	PUSHPABHARATHI .V	INFOSYS	11BEC069
30	SAHANA .B	INFOSYS	11BEC077
31	ARCHANA .B	INFOSYS	11BEC007
32	SABARISH KUMARAN .V	INFOSYS	11BEC076
33	KUNGUMA PRIYA .D	INFOSYS	11BEC047
34	PIRITHIVI .S	INFOSYS	11BEC061
35	V.SRI VIGNESH PRABHU	INFOSYS	11BEC097
36	KALAISELVAN. P	INFOSYS	11BEC033
37	SNEGAL .H	INFOSYS	11BEC095
38	VAISHNAVI .A.	INFOSYS	11BEC108
39	R.CHITHRA	NTT DATA	11BEC014
40	A.KANAGADHURGA	NTT DATA	11BEC034
41	P.KAVIYA PRIYA	NTT DATA	11BEC043
42	C.MADHUSREE	NTT DATA	11BEC049
43	R.MEGALA	NTT DATA	11BEC052
44	R.MOHANA PRIYA	NTT DATA	11BEC054
45	P.NIVETHA	NTT DATA	11BEC058
46	M.HINDUMATHY	NTT DATA	11BEC031
47	PRASHANTH.K	NTT DATA	11BEC063
48	YAATHAVE.P	NTT DATA	11BEC117
49	THAHASEEN FATHIMA.A.N	NTT DATA	11BEC104
50	S.SIVA SHANKAR	NTT DATA	11BEC113
51	M.VASANTH	NTT DATA	11BEC110
52	HARI PRAKASH	L&T INFOTECH	11BEC028
53	SREENATH A	L&T INFOTECH ,TCS	11BEC096
54	MANIKANDA BOOPATHY.M	SERVION GLOBAL SOLUTIONS	11BEC050
55	VINITHA	SERVION GLOBAL SOLUTIONS	11BEC114
56	LAKSHMI PRIYA K.S	ACCENTURE	12BEC310
57	SHYMALA GOWRI	IMPIGER	11BEC092
58	KARTHIKA.R	CTS	11BEC037
59	SUJITHRA	CTS	11BEC102

60	MANOJ.L	SENSIPLE	12BEC311
61	GOKUL KUMAR.S	SENSIPLE	11BEC022
62	SURESH KUMAR	SENSIPLE	11BEC103
63	VADIVEL.V	BURNING GLASS	12BEC325
64	K.KUPPUSWAMY	POLARIS , TCS	12BEC309
65	S.STALIN BALRAJ	TCS	11BEC098



Inauguration of Association



Technical Quiz “ TECHNOQUIZ” for 2nd year students



Alumni Interaction



Guest lecture on "Industries requirements from engineers" by MR. John Kennedy

SHAFATH RAJWA C.SUBRAMANIAM HALL

Dr. Mahalingam College of Engineering & Technology
IMCET Pollachi-642003
DEPARTMENT OF ECE
SEMINAR IN
TRAG
DATE





COLLEGE OF ENGINEERING AND TECHNOLOGY

Pollakkingal Technical Minds

Dr. Mahalingam College of Engineering and Technology
(An Autonomous Institution)

NPTC-MCET Campus, Udumalai Road, Pollachi-642 003.

ph : 04259-236030/40/50 ; Fax : 04259-2306070.

Web : www.mcet.in