NEWTON'S APPLE

A MAGAZINE BY ECE DEPARTMENT

STARTUP STORIES

EVENTS

AUGMENTED REALITY

PREPARATION CORNER

GRE VS GATE VS CAT

NEWTON'S APPLE

OCTOBER EDITION

Hello! Nice to see you again. Newton's Apple is back again with another edition for this month. If you've been reading our previous editions then a couple of pages into this edition you will realize that something's different. That's because there's been a slight change in the way we make our magazines. We're sure you will like this one better!

So go on! Let the Gyaan flow in!

Rex Bionics: Legs for the lame

Bio means "life" and onics means "it is related to electronics". So bionics is the study of those mechanical systems or machines that function like body parts of living organisms or the living organisms themselves. In other words it means using mechanical parts embedded with electronic devices to assist humans thereby supplementing or duplicating the parts of the body.The word *bionic* was coined by Jack E. Steele in 1958.

Rex bionics is the global technology leader in manufacturing robotic walking robotic devices. Rex is a blessing to all those who dream to walk , run and move with the help of their legs but remain restricted to their wheel chair. It is a realistic standing and walking alternative to the wheel chairs. It allows the user to sit, stand, walk, climb or get down stairs etc. It is a wonderful medium for all those who want to lead a normal life in spite of being wheel chair ridden . It is a self supporting system. The greatest advantage of rex is that it is easily adjustable. It works with the help of joysticks so using the device is also very easy. These robotic systems even have the power of rehabilitation. It also improves the health of people who are restricted to wheel chairs. Using the rex

systems one can stand and move here and there with proper stability thus eliminating the medical hazards caused due to continuous sitting at a place for a very long time. The rehabilitation facility available may also help in recovery in some cases. They also protect users from the shoulder injuries caused due to crutches. This makes them stress free. Also once rex is charged a person can continuously walk for about two hours without stopping. However the drawback of these devices is that these can be used only by those people whose upper part of the body is normally functioning and they can walk with the help of crutches. These devices can otherwise be known as robotic mechanised crutches.

Rex comes with a hefty price tag of US $150,000 (phew!) and at present is only available in New Zealand. Research is being carried out on how to control the robot with brain signals.

In order to use rex robotics exoskeleton, a user needs to be between 4-foot, 8-inches and 6-foot, 4-inches tall; weigh less than 220 pounds; and have a hip girth of less than 14.9 inches as the device weighs about 84 pounds. And, of course, he should be able to afford the price.

  Apart from rex, other devices that are trying to give mobility to wheel chair ridden people include Berkeley Bionics' eLegs, a robotic exoskeleton created by Berkeley Bionics and Lockheed Martin to give soldiers superhuman strength to carry loads up to 200 pounds for extended periods. eLegs are currently undergoing investigational trials and are expected to become available to rehabilitation centers by the end of the year. Another robotic suit, Argo Medical Technologies' ReWalk, is currently undergoing clinical trials in the U.S. The Israeli company says it expects to be selling ReWalk for personal use for about $83,500 by early next.

Contributed by: Lakshmi Prasanna(ECE-A-3/4)

Common Entrance Tests taken after Graduation
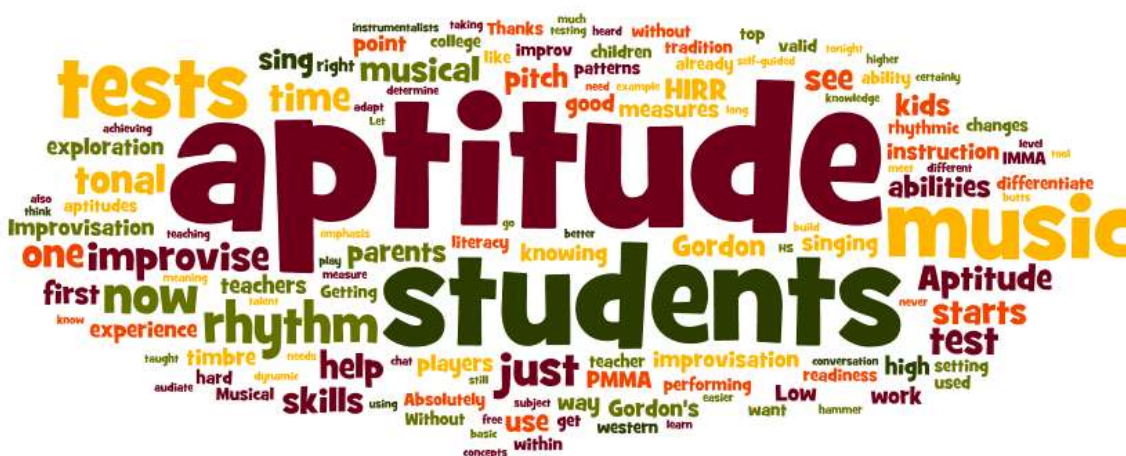
GATE

What is GATE?

- The GRADUATE APPTITUDE TEST IN ENGINEERING (GATE) is an all-India examination that primarily tests the comprehensive understanding of various undergraduate subjects in engineering and science.

Who conducts it and when to take the test?

- GATE is conducted jointly by the Indian Institute of Science and seven Indian Institutes of the National Coordination Board – GATE, Department of Higher Education, Ministry of Human Resources Development (MHRD), Government of India and the date of the test will be announced every year by the organizing institutes.

What are the eligibility criteria?

- Bachelor's degree holders in Engineering/ Technology (4 years after 10+2 or 3 years after B.Sc/ Diploma in Engineering/Technology) and those who are in the final year of such programs.

What is the format of the test?

- A candidate appearing for GATE has to be familiarized with the subject (or paper) code as he/she has to choose one amongst 23 codes while

application form submission and appearing for examination. A candidate is allowed to appear in only one paper.

What is the duration and type of the examination?

- The GATE examination consists of a single paper of 3-hour duration that contains 65 questions carrying a maximum of 100 marks. The question paper will consist of both multiple choice questions (MCQ) and numerical answer type questions.

- It is a Computer Based Test (CBT). The candidates are required to either select the answer (for MCQ type) or enter the answer for numerical answer type question using a mouse on a virtual keyboard. Blank paper sheets for rough work will be provided and these have to be returned back after the examination.

Top colleges/ Public sector companies who consider GATE score

Colleges : IISC Bangalore, IIT's and NIT's, OU, BITS.

Public sector companies: BHEL, NHPC, BOCL(Bharat Petroleum), IOCL(Indian oil), ONGC, GAIL, HPCL, Power grid, NTPC

The above listed are a few top institutes and core companies. There are various other companies and institutes considering the score.

Overview: GATE exam provides a platform to either continue our study in interested fields in India or to work in reputed core companies.

CAT

What is CAT and who conducts it?

- The COMMON ADMISSION TEST (CAT) is an all-India test conducted by the Indian Institutes of Management (IIMs) as an entrance exam for admission to the Post-graduate and Fellow Programs in management courses of several management institutes all over India including the IIMs.

- The CAT score is used separately by each institute along with other parameters i.e. academic performance, work experience, group discussion, written assessment and interview performance etc. to select candidates. The % consideration of cat score differs with different institutions.

What are the eligibility criteria?

- The candidate must be a graduate with 50% marks or equivalent CGPA (45% in case of SC/ST/DA/PWD) or possess an equivalent qualification recognized by the ministry of HRD, Government of India.

Test pattern, format and duration

- The test includes 100 question:

  Quantitative ability: 34

  Verbal Ability & Reading Comprehension: 34

  Data interpretation and logical reasoning: 32

- It is a computer based test, conducted in multiple cities during a window of 3-4 weeks. Candidate can select his / her test date and slot as per choice and availability.
- The duration of the exam is 3 hrs

List of top universities that accept CAT score

- Indian institute of Management Ahmedabad.

- Indian institute of Management Bangalore.

- Department of management studies IIT Delhi.

- University of Delhi.

- Indian institute of technology Bombay.

- Indian institute of Technology Madras.

- Indian institute of Management Lucknow.

- Indian institute of Management khozikode.

- Management development institute Gurgaon.

Few top career prospects after MBA through CAT score:

IT sector- After MBA in IT one can work as an IT manager, who is responsible to manage the computer systems of a company and ensuring that the computer systems are matching the company's requirements. He also looks after upgrading of technology and ensuring the security of the systems. MBA graduates who stay updated about the latest technological innovations are more likely to get selected.

Finance sector: A graduate with a degree in MBA (finance) can work both in banking and non-banking sectors. The students possessing an MBA degree in finance have a variety of job opportunities in government and the private sector. Opportunities such as investment banking, retail banking, wholesale banking in banks and corporate finance in non banking companies are open to finance graduates

Human Resource: The Human resource graduates are in great demand nowadays. The HR manager deals with the recruiting and hiring employees for the organization and is also responsible for the administrative tasks of the company. An MBA degree can offer advancement for the position and experience on the other hand is like an added cherry on the cake.

Sales & Marketing– The bread and butter of the Indian MBA placement scene- marketing is an evergreen field with recruiters such as P&G, HUL, Nestle, etc. taking in top tier MBA grads for marketing (product managers, advertising, etc.) and sales.

Overview: Students who wish to expand their exposure in managing/human resource skills, business skills and other administrative skills prefer this examination. There are various interesting fields for the students who wish to pursue MBA. Industrially, these fields of work are generally different than the technical field.

GRE

What is GRE and who conducts it?

- GRADUATE RECORD EXAMINITION (GRE) is one of e tests taken by the students who wish to pursue their higher education abroad. The basic principle of this exam is to grade an individual based on his/her verbal skills, quantitative reasoning, analytical writing and vocabulary skills which is out of the spectrum of any field of study.

- Conducted by ETS, GRE Test is available at about 700 test centers in more than 160 countries. It is available as a computer-based test or a paper-based one. In India, GRE is offered in the computer based format administered at respective testing centers.

Eligibility criteria

- Candidates are required to be holding a graduation degree. However some universities have a few basic criteria to be satisfied before admissions. Aspirants can register for the test irrespective of their age. A candidate may sit for the GRE test but his/ hers scores in the test will alone not be the yardstick for admission in the selection procedure of institute of choice.

What is the structure and time duration of the test?

- There are six sections which include analytical writing, quantitative analysis and verbal/vocabulary, with a 10-minute break following the third section. The overall testing time for the computer-delivered GRE® revised General Test is about three hours and 45 minutes.

- The out of score for GRE is 340 which is divided as 170 for verbal and 170 for quantitative analysis, with the range of scores from 130 to 170. The test is adaptable, hence the marking for each answer is not predictable. The scores for analytical writing are given separately ranging from 0 to 6.

Overview: GRE is one of the tests required for the students who wish to study abroad. All most every university abroad has now made the test as mandatory for the student as it tests the individuals' basic quantitative skills and whether the student is capable to understand/communicate in English. Students who wish to increase their exposure by travelling the world and work abroad generally take this test.

THE TWENTY SECONDS

All you need is

20

seconds

of insane courage

—— and ——

I promise you

something great

will come of it

Benjamin Mee
We Bought a Zoo

Our life is just like a movie, one situation after the other. Some happy, some sad. These situations come and go – may be it's our first salary, parents gave you a gift, or you excelled in the field what you were working on. But there are some situations, which we call weird, overwhelming or some screwy situations. When you are in such a kind of situation – may be because of you, or you are framed in that situation ,or maybe that is your fate ,whatever the reason is , there is no time for too much analyzing and thinking ,you just have to act. Failing to do so, might have an impact on your life. The way you choose to act in that situation might turn the course of your life or at least make you feel better (thinking positively !) .In these kind of situations , you might not have much time to act .All you got is that 'Twenty Seconds' to

think ,take a decision and then perform it. You may get one hour or one day or a certain deadline depending on what the situation is .But one thing for sure is, you got to act fast. This is going to determine what you are and what's in you. Let us see these situations which we may come across in life.

Situation 1: When you were going to college, there was an accident and you had an exam on that day. Of course everyone knows basic stuff, prioritize the things and then act .But then life does not always give a clear solution or easy choices. And now you have to take a decision in a short period.

Situation 2:You are giving a presentation and you are faltering because of obvious reasons. Certain thoughts will be running in your mind in this situation. Either you quit ,or continue faltering and complete the presentation whatsoever, or get back the confidence and hit the ground running. You have just got twenty seconds to think of it and act.

Situation 3: This happens with most of the people. Someone asks you to join and work with them in any program or a competition. You like it but others are not interested. And all you have got is twenty seconds to think and take a decision. Because after that you might not get a chance unless you are lucky.

Situation 4: In any relationship, when you are having tete-a-tete, you can't escape from the situation .You have just twenty seconds to think and answer without dismaying the other or the relationship.

These kind of situations are the real tests in life. You might decide to complete your work or stand for others. Pleasure or sacrifice. Again, giving something what we need to someone whom we need does not necessarily mean a sacrifice.

When a child falls in a crowd, he gets up and walks forward with the same smile. And when he grows up,it's not the same case because he feels that a grown up should never fall. That is because of certain standards setup by the people that this is right and that is wrong and he is following it .It's not that people don't know this stuff. They get 10 messages everyday in Whatsapp saying 'Be Good and Do Good' .God, who cares? People think that understanding the essence of the message is everything and of course forwarding it.

In life , we can't take decisions on what's easy or tough ,right or wrong .We have to take decision based on what's good and what's not.

Most of the people just limit this to reading and yes, may be forwarding. Whatever may be the situation we are in, what we do is what our conscience tells us to do. In the end it's just like what a character tells in a movie,

"You know, sometimes all you need is twenty seconds of insane courage. Literally just twenty seconds of embarrassing bravery. And I promise you something great will come of it."
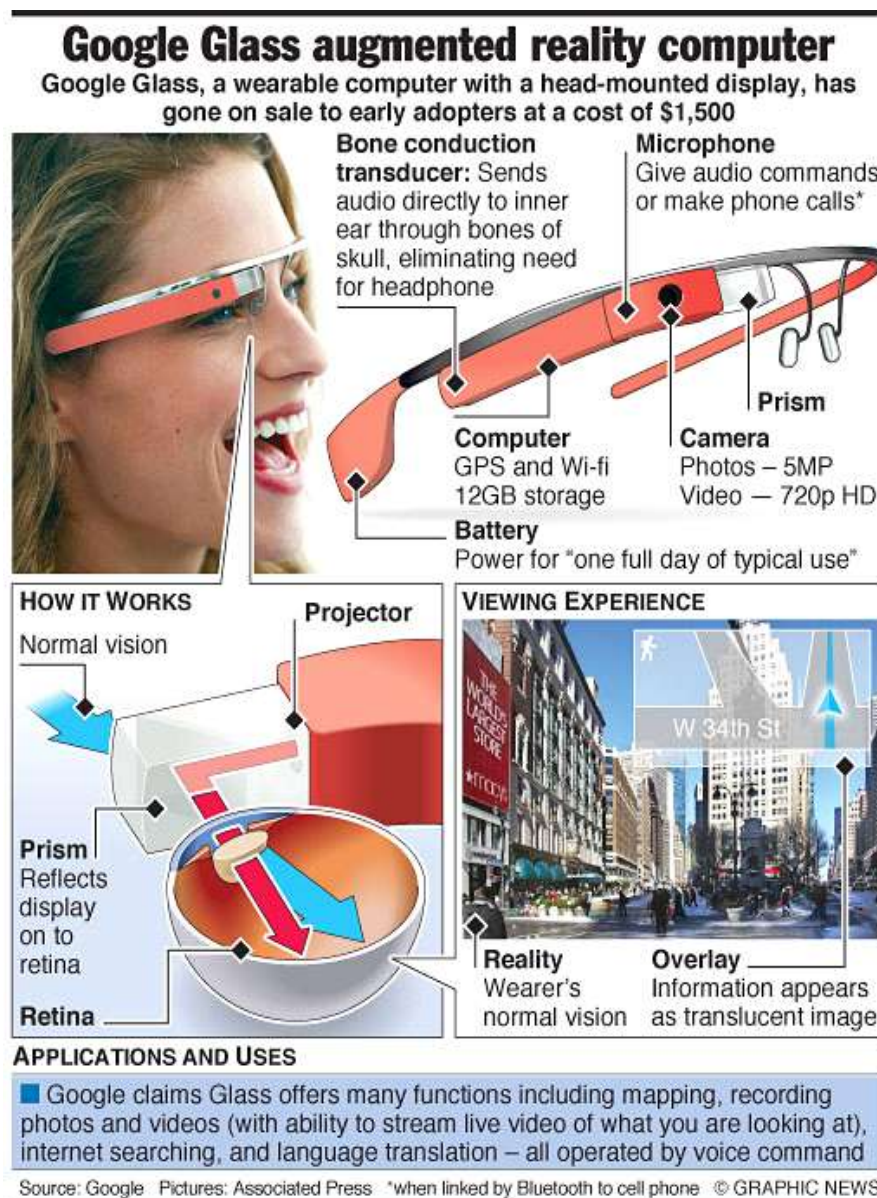

(PS:- When I was asked to write an article. I had less time. I had to take a decision quickly and start writing. That was my 20 seconds and I'm with the article.

What is your twenty seconds? Share your thoughts and opinions at Newton's apple mail.

By-Sheshasai (ECE-2/4)

AUGMENTED REALITY

Have you ever wondered if you could instantly know a person's name just by looking at his face. Or maybe glance at a shop on the street and all the information about the shop pops out right in front of you! Sounds like science-fiction? Maybe not, in today's world stuff like this is a reality. It's called Augmented reality. Google glass is perhaps the most popular example of how this technology can be put to use. Google has quite ingeniously come up with a wearable device that costs around 1500$ (1 lakh in rupees)and can show you details of people, places and also automatically translates text from one language to another!
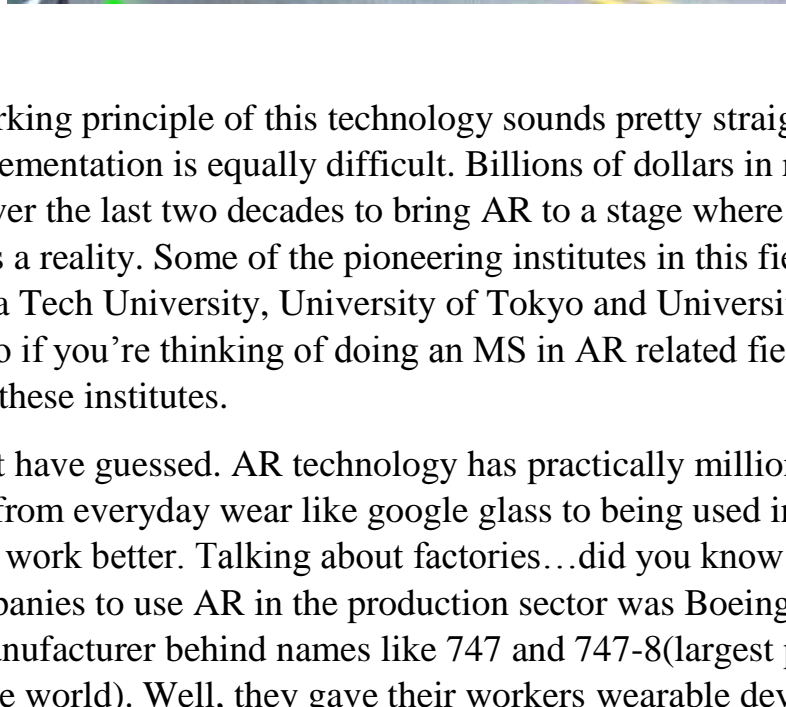

Google Glass augmented reality computer

Google Glass, a wearable computer with a head-mounted display, has gone on sale to early adopters at a cost of $1,500

Bone conduction transducer: Sends audio directly to inner ear through bones of skull, eliminating need for headphone

Microphone Give audio commands or make phone calls*

Prism

Computer GPS and Wi-fi 12GB storage

Camera Photos – 5MP Video — 720p HD

Battery Power for "one full day of typical use"

HOW IT WORKS

Normal vision

Projector

Prism Reflects display on to retina

Retina

VIEWING EXPERIENCE

W 34th St

Reality Wearer's normal vision

Overlay Information appears as translucent image

APPLICATIONS AND USES

■ Google claims Glass offers many functions including mapping, recording photos and videos (with ability to stream live video of what you are looking at), internet searching, and language translation – all operated by voice command

Source: Google   Pictures: Associated Press   *when linked by Bluetooth to cell phone   © GRAPHIC NEWS

So, how does this technology work? The principle is simple. The visual information in the user's surroundings(i.e stuff the user can see) is processed with the help of image processing software, all the relevant and useful data regarding the surroundings is accessed and then 'Augmented' with the natural vision of the user. So basically, Augmented reality is the 'reality' you see when computer generated data is combined with the natural vision of the user. So in essence, your world would look like this.

Well, the working principle of this technology sounds pretty straight forward. But, the implementation is equally difficult. Billions of dollars in research have been spent over the last two decades to bring AR to a stage where it can be considered as a reality. Some of the pioneering institutes in this field include MIT, Georgia Tech University, University of Tokyo and University of California. So if you're thinking of doing an MS in AR related fields make sure you apply to these institutes.

As you might have guessed. AR technology has practically millions of applications from everyday wear like google glass to being used in factories to help workers work better. Talking about factories…did you know that one of the first companies to use AR in the production sector was Boeing? The famous aeroplane manufacturer behind names like 747 and 747-8(largest passenger airplane in the world). Well, they gave their workers wearable devices similar to

this one to help them figure out the right way to make a few electrical connections.
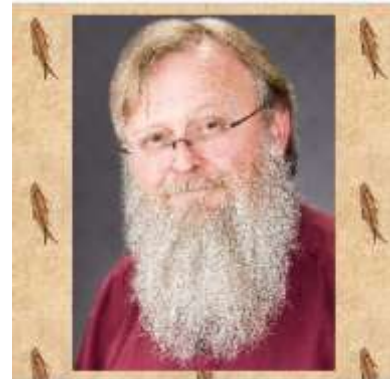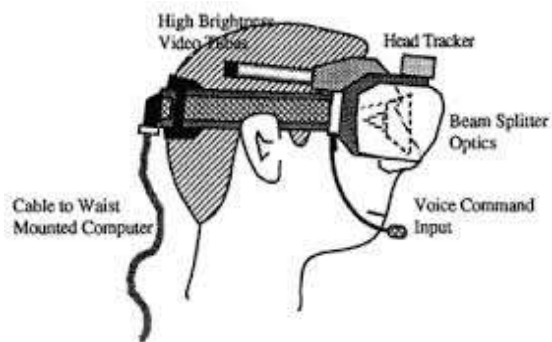

It was one of their researchers "Thomas Caudell" who coined the term Augmented Reality and developed one of the earliest wearable AR devices.

Today, the technology has come a long way and is being used in a wide range of fields. Gaming included for example 'Oculus rift'.

This is a gaming device which is set to revoltionze the world of virtual gaming. According to their website this is what the world will look like to the user.
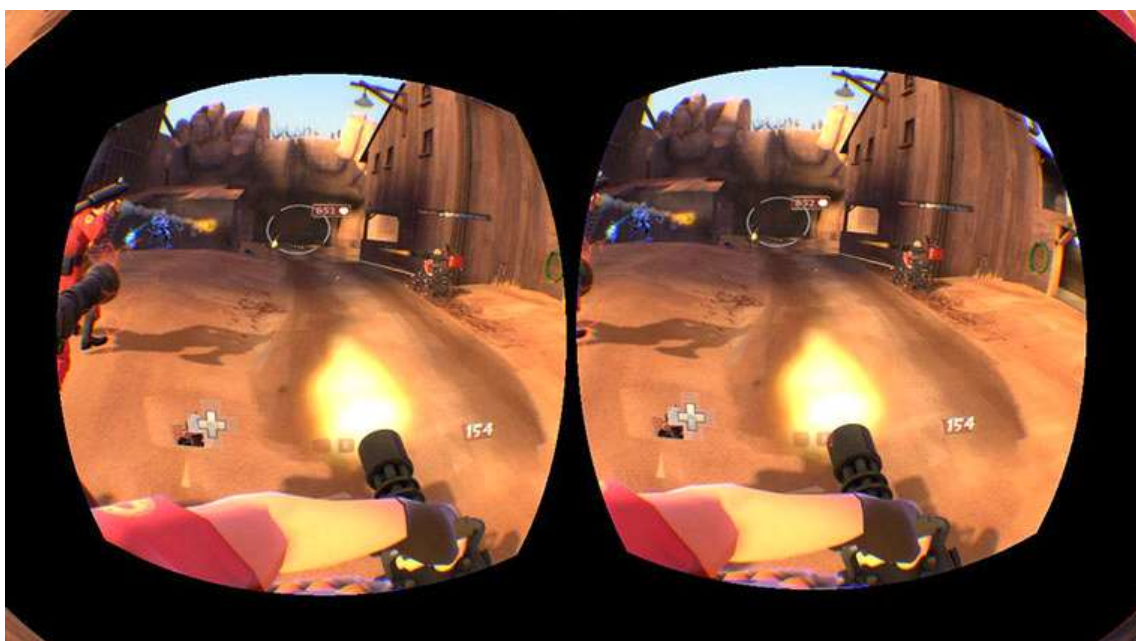
The Oculus rift will be released in Q1 of 2016 (Before march). In addition to this AR is also being put to good use in the field of Medicine where students can learn about different parts of the human body without having to use an actual dead body. In flight training and military too, AR is of good use as simulations look more real world like and give pilots a better understanding.

All in all, AR is right now what the internet was in the early 90's. It's a field that's all set to explode opening up interesting applications in almost every field. The future will be closer to the sci-fi movies we've all watched. So get ready!

STARTUP STORIES-1

You need someone to urgently deliver a birthday cake and Coca Cola in the middle of the night? Or do you need to be rescued from your broken down car in the middle of nowhere? What if you get a genie who treats you as his master? What if you utter a wish and God says immediately – "TATHASTU"?

Seems like a dream right? But four IITtians from IIT Mumbai have come up with a startup to make this dream come true! And they named it 'Tathastu'. 'Tathastu' is a brain child of Chirag Chadha, Anshul Avasthi, Prashanth Villa and Nivvedan, which is a WhatsApp based local personal assistance service that helps people get various day-to-day tasks done.

How 'Tathastu' started? Being students, the co founders of Tathastu had been using most of the latest apps. But they soon realized that no one really likes to download so many apps, which comes into use once in awhile. For instance you buy clothes once in a month but you have to download various shopping apps to buy just one dress. Or may be you need a taxi once in awhile but have to download an app to book it for just that particular instance. They followed the data for what the users like to do on their mobile phones. And found out that 70% of the time spent by people on their smartphones is spent on texting/IM based. Thus the idea came up of a one stop texting solution to all the needs of a customer. Just Whatsapp them what you want, whenever you want it, and they will do it for you.

"The basic idea was to create a solution that brought together human and machine intelligence. Tathastu is your personal assistant. They will use every trick up our sleeves to make sure that no one who approaches them goes back empty handed. And as for what they can do – the sky is the limit."

How it works:

Once a user is registered, they are added to a waitlist (which is currently close to 6,000 people). So far, Tathastu has granted access to just 600 users but this number will go up soon.

The app takes two kind of requests— information and time-based ones. The former requires the staff to look up solutions, call up vendors, and make reservations and bookings on the behalf of clients. In the latter, Tathastu sends out its own riders to make pickups and deliveries, or fill out forms, etc.

 If you can dream it, you can do it. -- Walt Disney. So start dreaming and be ready to face all challenges in the process of meeting your dream.

-Sahithya Reddy K(ECE B-4/4)

CAMPUS EVENTS

Workshop on Sixth Sense Technology (held on 3-4 October)

Sixth Sense Technology is a revolutionary way to augment the physical world directly without using dedicated electronic chips.

The workshop on Sixth Sense Technology and its Applications by GeeksLAB Technologies was oriented to nourish specific skills and creativity among the students to think beyond the main course technologies and work on the future technologies that would make them efficient to match the professional needs and demands.

When compared to humans, intelligence of robots and machines always lags behind. Using Sixth Sense Technology (Visually Controlled Machine), which makes use of "digital image processing", we can provide artificial eye to the robot so that it can sense surroundings and react accordingly. Hence intelligence of the machines can be enhanced to certain extent. In this workshop, the

students learnt the basics of sixth sense technology and its applications along with the implementation of the same in controlling the movement and applications of robot based on the location of the object.
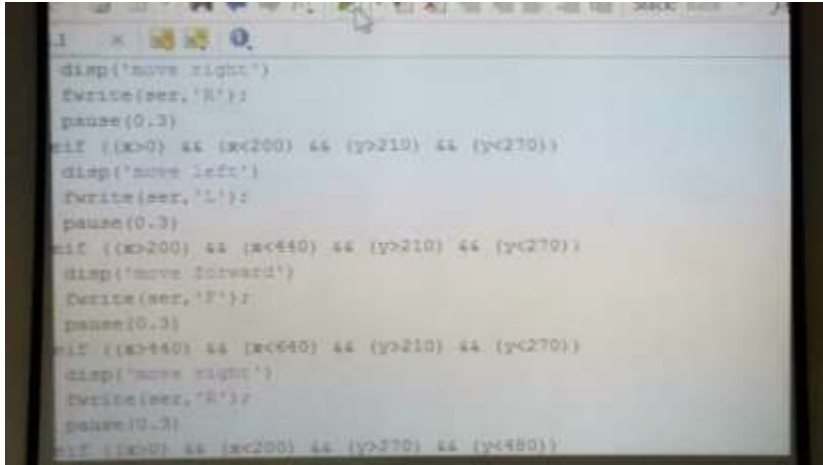
This workshop was ideal to allow students implement the theoretical knowledge practically onto machines thus making them intelligent. The workshop was designed to quickly get the participants up to speed with implementing the Sixth Sense Technology.

During the workshop, we could develop our own;

1. Gesture controlled robot.

2. Gesture controlled mouse pointer app.

3. Gesture controlled PC application.

4. Gesture controlled music player.

5. Gesture controlled picture clicking app

IIT MADRAS WORKSHOP
SHAASTRA

Shaastra is the annual technical festival of INDIAN INSTITUTE OF TECHNOLOGY (IITM), Chennai, India. The sanskrit word 'Shaastra' means science and the festival accordingly consists of various science and technology

based competitions, symposia, lectures, video conferences, exhibitions, demonstrations and workshops.

The students from IIT Madras have organized workshop in VASAVI COLLEGE OF ENGINEERING on 3rd october,15 and 4th october,15.

The following events were organized on saturday that is 3rd october,15.
- CODEX, EMBEDDED SYSTEMS AND ROBOTICS..

- HOW THINGS WORK: It's basically a quiz based on working mechanism of things around us.

- POSTURE PRESENTATION.

- PCB DESIGN WORKSHOP: It's a workshop which helps in learning the building of circuits using Eagle's software.

The following events were organised on sunday thai is 4th october,15.
- LINE FOLLOWING ROBOTIC WORKSHOP: It is the workshop based on the mechanism assigning the path to robots.

- REVERSE CODING: It's about the writing input code when they give the output.

Upcoming Events:

Fest starts	Fest name	Fest type	College Name	City	Festends
1.30th Oct 2015	Technozion	Technical	NIT Warangal	Warangal	1st Nov 2015
	2015				
2.26thOct 2015	TechSolarKGP	Technical	IIT Kharagpur	Kharagpur	29th Oct 2015
	15	Symposium			
3.19th Dec 2015	International	International	IIT Madras		

Chennai 20th Dec 2015

      Conference Conference

      on Innovative

      trends in

      Electronics

      Communication &

      Applications

      ICIECA 2015

4.26th Dec 2015 Techfest 15-16 Technical   IIT Bombay
Mumbai 28th Dec 2015

          Symposium

5.26th Dec 2015 Techfest Technical IIT Bombay Mumbai 28th
Dec 2015

     IIT Bombay Festival

6.29th Jan 2016 ELAN 2015 Technical cum IIT Hyderabad
Hyderabad 31st Jan 2016

        Cultural Fest

7.1st Feb 2016 Desire '15 National level IIT Indore
Indore 29th Feb 2016

        Robotics

        Championship

8.29 Jan 2016 Pravega '16 Science   Indian Institute
Bangalore 31 Jan 2016

       & technology of Science

Prep Corner

I. GRE

Maths:

1.A university admitted 100 students who transferred from other institutions.Of these students, 34 transferred from two year community colleges, 25 transferred from private four year institutions and rest transferred from public four year institutions. If two different students are to be selected at random from 100 students, what is the probability that both students selected will be students from two year community colleges? Give your answer in fraction.

2. Each employee of a certain company is in either Department X or Department Y, and there are more than twice as many employees in Department X as in Department Y. The average (arithmetic mean) salary is $25,000 for the employees in Department X and $35,000 for the employees in Department Y. Which of the following amounts could be the average salary for all of the employees of the company?

Indicate all such amounts.

A. $26,000

B. $28,000

C. $29,000

D. $30,000

E. $31,000

F. $32,000

G. $34,000

Verbal:

1.The corporation expects only _____ increases in sales next year despite a yearlong effort to revive its retailing business.

A. dynamic

B. predictable

C. expanding

D. modest

E. slight

F. volatile

2.It is refreshing to read a book about our planet by an author who does not allow facts to be (1)_____ by politics: well aware of the political disputes about the effects of human activities on climate and biodiversity, this author does not permit them to (2)_____ his comprehensive description of what we know about our biosphere. He emphasizes the enormous gaps in our knowledge, the sparseness of our observations, and the (3)_____, calling attention to the many aspects of planetary evolution that must be better understood before we can accurately diagnose the condition of our planet.

Blank 1	Blank 2	Blank3
Overshadowed	enhance	plausibility of our hypotheses
Illuminated	obscure	certainty of our entitlement
Invalidated	underscore	superficiality of our theories

Passages:

1)   Reviving the practice of using elements of popular music in classical composition, an approach that had been in hibernation in the United States

during the 1960s, composer Philip Glass (born 1937) embraced the ethos of popular music in his compositions. Glass based two symphonies on music by rock musicians David Bowie and Brian Eno, but the symphonies' sound is distinctively his. Popular elements do not appear out of place in Glass's classical music, which from its early days has shared certain harmonies and rhythms with rock music. Yet this use of popular elements has not made Glass a composer of popular music. His music is not a version of popular music packaged to attract classical listeners; it is high art for listeners steeped in rock rather than the classics.

1.The passage addresses which of the following issues related to Glass's use of popular elements in his classical compositions?

A. How it is regarded by listeners who prefer rock to the classics

B. How it has affected the commercial success of Glass's music

C. Whether it has contributed to a revival of interest among other composers in using popular elements in their compositions

D. Whether it has had a detrimental effect on Glass's reputation as a composer of classical music

E. Whether it has caused certain of Glass's works to be derivative in quality

2.The passage suggests that Glass's work displays which of the following qualities?

A. A return to the use of popular music in classical compositions

B. An attempt to elevate rock music to an artistic status more closely approximating that of classical music

C. A long-standing tendency to incorporate elements from two apparently disparate musical styles

3.Select the sentence that distinguishes two ways of integrating rock and classical music.

2)   A study based on a year-long analysis of data from an extensive mobile phone network has produced interesting information that   might be of use to epidemiologists and social scientists. The data, according to the researchers, might shed light, for example on how diseases and information (or rumors) are transmitted through social networks.

   Researchers ranked the link between a pair of phone users on   the basis of the total time spent talking to each other.   'Strong' links exist between members of a close social group.   'Weak' links tend to be more long range and join individuals   from different social groups. The researchers observed a dramatically   different effect when they removed links in the network in rank order, depending on whether they removed links starting with the strongest or with   the weakest. To their surprise, removing the strong links first had little effect on the overall structure of the network. But removing weak links first split the network into a series of unconnected islands, with individual users linked to a small collection of other phone users.

        Thus the researchers have hypothesized that the weak links(the more tenuous connections between individuals from different social groups) might be very important in maintaining wider social cohesion. If you lose contact with casual acquaintances you may fragment your social circle, but if you stop talking to your brother there might be less visible impact on the structure of your social network.

1. The passage offers support for which of the following positions?

A. 'Weak' links are more important than 'strong' links

B. Links between family members would be likely to be disrupted by terminating 'weak' links

C. Some people believe that phone-network patterns could be useful to social scientists

D. Information transmission through phone networks is essentially the same as information transmission through face-to-face contact

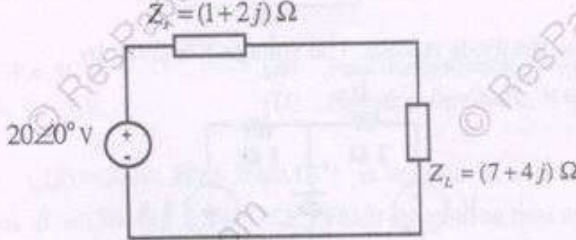E. The 'strong' links are between geographically close individuals

2. In the last sentence the author apparently intends to

A. make the ideas more specific to enhance the reader's understanding

B. reinforce the researchers' conclusions

C. provide a practical illustration of the meaning of a strong link

D. generalize the argument to make it more appealing

E. concretize an argument about the usefulness of the current research

3. Which of the following can be inferred from the passage?

A. The researchers had not anticipated the specific effects of removing weak links

B. The phone-network studied had the same number of users throughout the study

C. The phone users were unaware of the study

To know the answers, keep following Newton's Apple Facebook page or wait for the next edition!

II. GATE

1.

An AC source of RMS voltage 20 V with internal impedance $Z_s = (1+2j)\,\Omega$ feeds a load of impedance $Z_L = (7+4j)\,\Omega$ in the figure below. The reactive power consumed by the load is

$Z_s = (1+2j)\,\Omega$

$20\angle 0°\,V$

$Z_L = (7+4j)\,\Omega$

(A) 8 VAR   (B) 16 VAR   (C) 28 VAR   (D) 32 VAR

2.

The switch in the circuit shown was on position a for a long time, and is moved to position b at time $t = 0$. The current $i(t)$ for $t > 0$ is given by
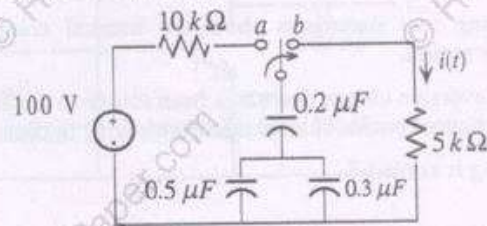
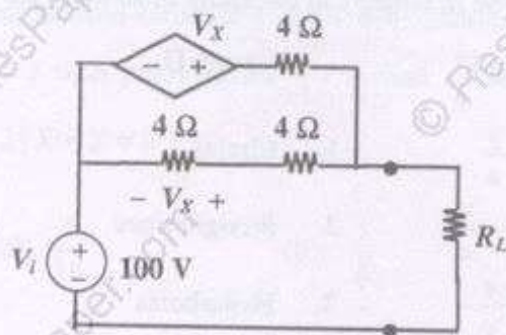(A) $0.2e^{-125t}u(t)$ mA

(B) $20e^{-1250t}u(t)$ mA

(C) $0.2e^{-1250t}u(t)$ mA

(D) $20e^{-1000t}u(t)$ mA

3.

In the circuit shown, what value of R_L maximizes the power delivered to R_L?

(A) $2.4\ \Omega$

(B) $\dfrac{8}{3}\ \Omega$

(C) $4\ \Omega$

(D) $6\ \Omega$

4.

The time domain behavior of an RL circuit is represented by

$$L\frac{di}{dt} + Ri = V_o\left(1 + Be^{-Rt/L}\sin t\right)u(t).$$

For an initial current of $i(0) = \frac{V_o}{R}$, the steady state value of the current is given by
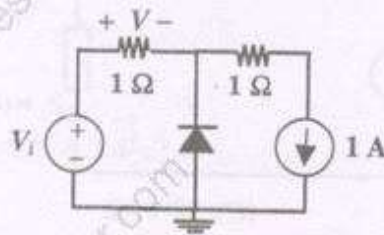
(A) $i(t) \rightarrow \dfrac{V_o}{R}$

(B) $i(t) \rightarrow \dfrac{2V_o}{R}$

(C) $i(t) \rightarrow \dfrac{V_o}{R}(1+B)$

(D) $i(t) \rightarrow \dfrac{2V_o}{R}(1+B)$

5.

In the circuit below, the diode is ideal. The voltage V is given by

(A) $\min(V_i,1)$ (B) $\max(V_i,1)$ (C) $\min(-V_i,1)$ (D) $\max(-V_i,1)$

6.

Consider the following two statements about the internal conditions in an n-channel MOSFET operating in the active region.

       S1: The inversion charge decreases from source to drain
       S2: The channel potential increases from source to drain

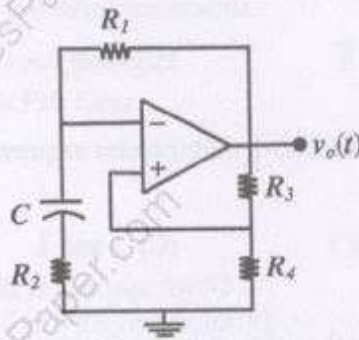Which of the following is correct ?

(A) Only S2 is true
(B) Both S1 and S2 are false.
(C) Both S1 and S2 are true, but S2 is not a reason for S1
(D) Both S1 and S2 are true, and S2 is a reason for S1

7.

In the following astable multivibrator circuit, which properties of $v_o(t)$ depend on R_2?

(A) Only the frequency
(B) Only the amplitude
(C) Both the amplitude and the frequency
(D) Neither the amplitude nor the frequency

8.

What are the minimum number of 2-to-1 multiplexers required to generate a 2-input AND gate and a 2-input Ex-OR gate?

(A) 1 and 2   (B) 1 and 3   (C) 1 and 1   (D) 2 and 2

To know the answers, keep following Newton's Apple Facebook page or wait for the next edition!

III. CAT

1. In a race, of length of 'd' m, Amar beats Bhavan by 'x' m and Charan by 'y' m. By what distance does Bhavan beat Charan in same race?

A) (y-x)d / (d-y) m

B) (y-x)d / (d-x) m

C) (d-y)d / (d-x) m

D) (y-x) m

2.Prashanth borrows a sum at compound interest and it amounts to Rs 1,38,240 at the end of 3 years and to Rs 1,99,065.60 at the end of 5 years. What is the sum borrowed?

A) Rs 76,000   B) Rs 80,000   C) Rs 90,000   D) Rs 96,000

3.At what time do the hands of clock coincide between 1 PM and 2 PM?

A) 1:05 5/11 PM

B) 1:05 PM

C) 1:06 5/11 PM

D) 1:06 PM

4.P is an integer whose digits are zeros and ones. The sum of digits of P is 4 and $10^5 < P < 10^7$. How many values can P take?

A) 30   B) 60   C) 10   D) 20

5.Find the sum of first 10 terms in the following series
$3^2(1)+4^2(2)+5^2(3)+6^2(4)+....$

A) 4675   B) 4785   C) 4875   D) 4915

6.The range of x for which $|x^2+x-2| \leq x^2-x$ is

A) [-1,1]   B) (-∞,-1]   C) [1,∞)   D) no value of x

7.If a square is selected at random from an 8x8 chess board, what is the probability that it is a 3x3 square?

A) 3/8   B) 3/17   C) 1/64   D) 5/17

8.A laptop was sold at a profit of 15%. If it was sold at a price that was 10% lower , the profit would have been 1050. What is the cost price of the laptop?

A) 21,000   B) 35,000   C) 30,000   D) 42,000

9.Rs 117 was supposed to be divided among Rohan, Sohan and Mohan in the ratio of 2 : 3 : 4. By mistake it was divided in the ratio of 1/2 : 1/3 : 1/4. Find the loss/gain of Rohan due to the mistake (in Rs).

A) gain,26   B) loss,26   C) gain,28   D) loss,28

10.Find the angle between the hands of clock at 2:30 PM in degrees.

A) 120°   B) 135°   C) 105°   D) 100°

To know the answers, keep following Newton's Apple Facebook page or wait for the next edition!

A SMALL MESSAGE BY THE MAGAZINE EDITOR

Thanks for reading! We hope you enjoyed yourself reading this Magazine. Every edition of Newton's Apple is a result of a considerable amount of hard-work and dedication by the Newton's Apple team. It is entirely possible that a few errors have crept-in in spite of the scrutiny every single article was subjected to. If you find any factual, logical or grammatical errors please inform us by mailing us on newtonsapple.vasavi@gmail.com You can also message us on our Facebook page.

Wanna see your article in the next edition? Mail us your article on newtonsapple.vasavi@gmail.com We will be more than happy to publish it in our upcoming edition.

And yes, please like our facebook page and share the gyaan you received by reading this wonderful piece of art. Have a great day!