

NEWTON'S APPLE

SCIENCE + TECHNOLOGY + DESIGN



Automatic Cars

know the technology behind the new generation of cars



PLUS

- Nano fish robots
- Events at vce

PREFACE

Hello, Reader! Welcome to the October edition of
Newton's Apple.

This edition, we provide you a sneak peek into the technology of future, which could revolutionize our day-to-day life in years to come. Be sure to know that there is more to be written and certainly more to be read in the forthcoming time. So without further ado, prepare yourselves to be amazed and enlightened!

Any suggestion to improve the value of this magazine will be gratefully received and will be incorporated in subsequent editions after due scrutiny.

THE EDITOR

CREDITS

**DESIGN – Mohammed Ismail Khan
Imran Ahmed
Nandini Vurimella**

**ARTICLES – M. Shiva Sai
Nandini Vurimella
Malavika Prasad
G. Vishnu
S.Sheshasai**

*And also, not to forget, the entire **Newton's Apple team.***

CONTENTS

(You can click on the topics to make that page)

[4](#) [COVER STORY](#)

LiDAR Technology in Automatic
Cars

[7](#) [TECHNOLOGY](#)

NanoFish in Drug Delivery

[9](#) [GUEST LECTURE ON 5G](#)

[11](#) [ALUMNI REUNION](#)

[13](#) [ALUMNI SEMINAR](#)

Gate exam and opportunities

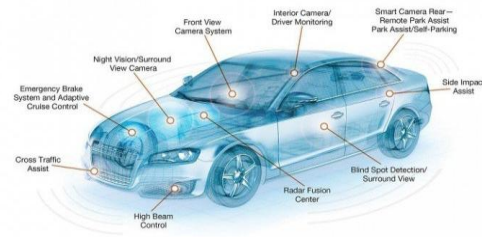
LiDAR

In today's world, we are witnessing an exponential growth in funding for realizing driverless cars. In comparison to the myriad of bad behaviors a driver might exhibit behind the wheel, a computer is actually an ideal motorist. Since 81 percent of car crashes are the result of human error, computers would take a lot of danger out of the equation entirely. They can even detect cars which are in front, on the sides. These cars are even adjusting their speed depending upon the distance between that car and car in front of them.



Finding the distance between cars can be done in many ways. For example,

- Using cameras
- Using RADARs
- Last but not least using LiDARs



Cameras shoot photos from all angles and from that it detects the distance. The disadvantage of using cameras here is that in the night time or in winter like fog conditions, it fails to work.

Coming to radars, it can accomplish a variety of tasks such as detecting objects, its speed, position and the structure of objects in front of it. But one of radar's drawbacks is its short range and less accuracy.

LiDAR

Here we find LiDAR's extensive use. LiDAR is nothing but light detection and ranging. We can say that it is in a way analogous to RADAR as RADAR uses radio signals for its detection, whereas LiDAR uses laser light for its detection.

The main principle involved here is that the device emits a

TECHNOLOGY

laser pulse if there is any object in front; laser hits the objects and returns. The time taken for it to return is measured and wavelength of laser pulse using both these distances is calculated. From these, depending upon the distance, car is controlled.

Components

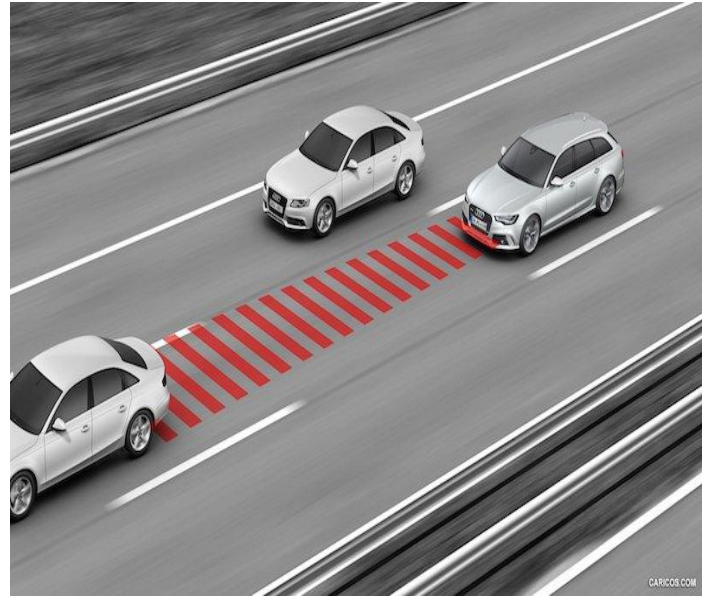
- a) LASER,
- b) Scanner and Optics,
- c) Photo detector and Receiver electronics
- d) Position and Navigation systems



LiDAR equipment

Laser is the one which creates laser signal. In case of lasers 600nm-1000nm lasers are used for commercial applications. In cases of high precision requirements, finer lasers are used. But these lasers can be harmful to eyes; therefore, 1550nm lasers are used in such cases. Scanner sends it in different directions or its required direction.

Receiver electronics detect these laser pulses and calculate the time taken for it to reach receiver.



The main advantage of LiDAR is its high accuracy. Even it can create 3D topography of a place, where it is placed. It creates 3D image of a place. It is mostly used in autonomous cars because it can work in any kind of weather conditions. It's mainly used in adaptive cruise control (i.e. controlling the speed of car depending upon distance and speed of in front cars) of autonomous cars.

Written by:

M.SHIVA SAI

B.E. (3/4) ECE-A

Edited by: IMRAN AHMED

B.E. (3/4) ECE -A

NanoFish technology in Drug Delivery

Can you imagine fishes swimming in your bloodstreams???

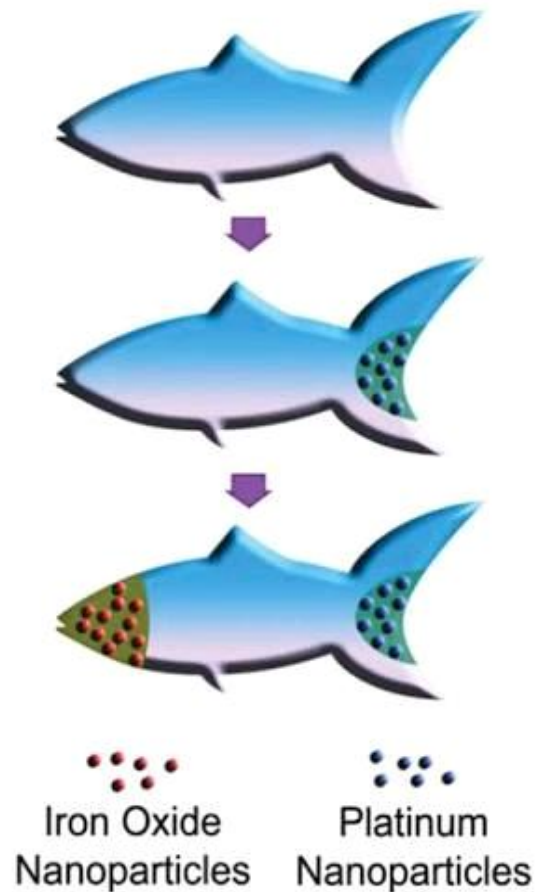
Well, we all have seen fishes swimming in waters. But with the growing technology, we can soon see them in our body fluids. Don't get shocked because these fishes are 3d-printed used for drug delivery.

Yes, NANO ENGINEERS from US San Diego have created microscopic fishes which help in the effective drug delivery to the fragile parts and tumors in the body. Before developing the microbot fishes scientists created nanoparticulated drug delivery units which are in cylindrical or spherical in shape. Because of its shape it was hard to steer them in the body fluids. So they created this microscopic fishes for the effective drug delivery

STRUCTURE AND WORKING OF MICROSCOPIC FISH:

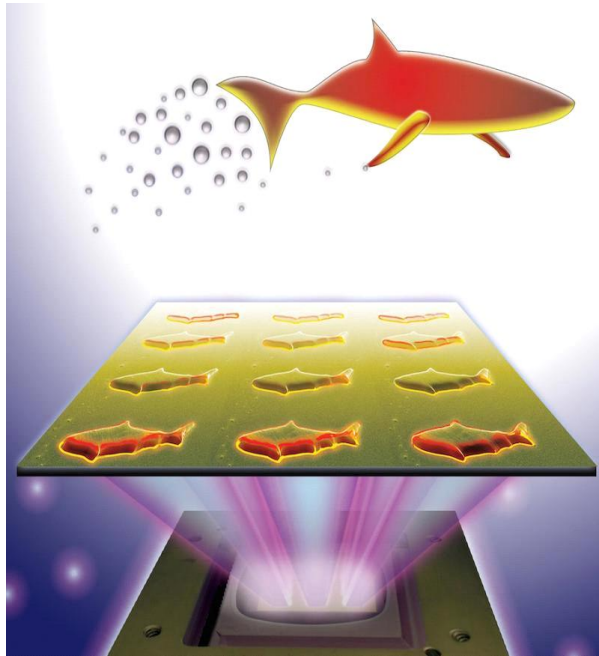
The microbot fishes are developed using 3d-printing technology we can print 100s of microbot fishes in a second. These microscopic fishes are powered by

Hydrogen peroxide and contain platinum and iron oxide particles which have the power to remove the toxins from water.



TECHNOLOGY

They have a width of 30 microns which is less than the width of human hair (70 microns in general).



So let's Hope these revolutionary microbot fishes will come for the patient's rescue soon making surgeries safer and accurate.

Written by:

Nandini Vurimella

B.E. (3/4) ECE-B

Edited by:

Mohammed Ismail Khan

B.E. (3/4) ECE -B

Their structure makes them to be self-propelled and magnetically steered. The iron oxide material present in its body helps them in steering magnetically.

When the scientist incorporated the toxin-neutralizing nano particles in their body, their powerful swimming ability help them to effectively clean the toxin materials like those which are present in the venom of bee sting. These microbot fishes will bind with the toxic materials and will emit red light which tells us whether they performed their job or not. The more toxic material they detect the more is the intensity of the red light.

A Journey to the 5th Generation

NOW THE WORLD IS AT YOUR FINGER TIPS...

(A brief report on the seminar conducted by Dr. Humaira Nishat.)

Evolution is said to be a slow process, it necessarily takes time to evolve into a better thing, But in the technological world-it has now become a myth!. Technology is evolving so rapidly, that it becomes nearly impossible to maintain a detailed count on it. Probably a prominent reason that triggered the advancement in technology could be –the need for speed. In this 21st century, nobody wishes to waste time waiting!. Our demand for safe, secure and speedy communication grows day by day, sparing no room for lack of connectivity issues. Fortunately, this generation technology has been able to achieve this to a large extent-with the coming up of 3G-4G networks, our miseries are abolished. But Hold on-ever wondered what this 4G actually meant? How is the speed of a network determined? How do they do it?

On 5th August, we the students of the ECE department availed the opportunity to attend a seminar on “Journey to the 5-G” conducted by Dr. Humaira Nishat. A

professor by profession from CVR college of Engineering, she had no trouble in taking us into a deep world of electronics, where she explained us all the technical aspects that goes behind speeding the process of connectivity. Her enthusiasm and attachment to the subject drove our curious minds into thinking beyond the reality. She also ensured that her presentation covered all the areas that the core academic failed to touch and also added the day to day examples which made it more interesting.

Here are the highlights of the seminar:-

1) She believed that history helped us to revitalize our concepts and to know how everything had begun. She started from the prehistoric ages on how the communication mechanisms worked starting from using of messenger to telegrams. Eventually to the telephones and to this day mobile technologies.

2) Her work intrinsically explained about the network components and also demonstrated how our landline works. The downfalls of the landline communication system lead to an effective development to the mobile networks. The invention of the CDMA-(code division multiple access) was a

EVENTS

revolutionary step that actually lead to high level of advancement in Mobile Networks. The presentation contained a chronological arrangement of evolution of networks which was really interesting to note.

3) At the end, she let us take a glimpse of the near future of the 5th -Generation Networking Technology, on how the scientist and researchers aimed at accomplishing the task of achieving greater speed and larger storage. This session helped us gain adequate knowledge on the field of Networks and gave us a practical perspective on how things actually work.

and enlightening our minds with her knowledge.

This journey shall stay treasured in the hearts of all the students....

Written and Edited by:

Malavika

B.E. (3/4) ECE-A



We take this opportunity to thank Dr, Humaira Nishat for her taking such efforts

Synergy with Alumni

The feeling when you enter your college after 2 decades is really inexpressible. It has to be experienced that's it...as no words could explain. Each and every one of us will face a similar situation may be few years from now. The alumni of 1992-1996 batch gone through this on 30th of July as they were up for a get-together. The energy and the enthusiasm in them startled and drove me crazy. They got a chance to live like teens and cherish their past. After the photo session, I spoke to the founder of company, a scientist, CEO of company etc...Yes!!They are our alumni. I felt goosebumps at that point of time .I am sharing my experience here.....few questions were posed

What advice do you like to give to today's generation?

They replied, "Don't waste your 4 years of engineering. The topics which we read are basics, they may not be directly seen anywhere but the upcoming technologies are based on the same basics. Students think these topics are of no use .without a clear view regarding them the syllabus would be like a maze. Try to correlate the topics you have read in different subjects. Don't see them as different subjects. One of the examples is the vibration of a mechanical body can be seen as a sine wave which is an input to an electrical

system. Try to learn and apply the concept but not to ratify.

What were their life experiences?

Some of them even had done part-time jobs for their living. What are we doing? We are not able to spare sufficient time even to study. They had 36 hrs or we have only 12 hrs per day? It's the social media squeezing all the time from our life. If we can cut down the social media then we can do miracles. It's all about the right usage of time .

How should we face the situations when we fail in our attempts?

Failure is the stepping stone to success. Every time you fail, you learn a lesson. I feel as many times you fail that many lessons you learn. Don't take the failure as a defeat. Try to learn,. Improve yourself, analyze what went wrong and never repeat it. That is the real essence of education .Don't get de-motivated.

Which stream shall I choose after my engineering?

We have many streams to choose ,it may be placements, MBA, MS, MTech, civil services etc. It may be any path but don't choose a path because somebody chose it for you. Take the proper decision, because

it is your life. Choose a path which you feel passionate about, you feel like doing.

Which branch should we choose in MS or MTech?

Again it depends on your interest, it doesn't mean if you chose a branch there is no work done. There is no such thing as easy money and easy job. Anywhere you go, you should work hard and give your best.

This was followed by felicitation ceremony for all faculty who have been striving hard from their time till date. Their respect for teachers was undying. That was a moment of inspiration.

Such synergy with them would enlighten us and increase our knowledge.

Written By:

G Vishnu Sankeerth

B.E. (3/4) ECE-A

Edited by:

Sai Sahaja.M

B.E. (3/4) ECE-B

TALK BY ALUMNI – B.BALAPRASAD (bbalaprasad91@gmail.com)

Mr.Balaprasad did his BE at Vasavi College of Engineering from 2009-13. After that he worked at Cognizant for two years, which he considers as the years which he wasted in his life. After that he prepared for GATE again, in 20 days as he said with a perfect plan in his mind. And now he is doing his ME 2nd year at IISC, Bengaluru. He spoke about life at IISC and Research opportunities in India. “Think about what you are doing and Don’t follow others blindly. The best friend of you is yourself. Only you can judge yourself and only you can guide yourself where you want to go. “Think Individually.” is what he said about being successful in his own words.

He said that all the software jobs are merely ‘typist jobs’ where one will be working mostly on MS Office and nothing more than that. “These software jobs don’t give you satisfaction, enough money, and you won’t be using any technical knowledge what you gained in B.Tech – that knowledge would just be a waste” he adds. B.tech allows us to think on our own. He emphasized on the advantages of doing M.tech and research like – people will get jobs easily with higher pay packages, you will be given

stipend and one can get money through patent rights as well. In most of the software companies, salary will increase to 5-6 lakhs per annum after 3 years (atleast). In those years we can complete M.Tech and get pay package upto 10 lpa. Mr.Bala Prasad also pointed out the importance of Mathematics in research. M.Tech mostly deals with applications of mathematics, be it software or hardware. Self motivation, Action plan, Hard work and belief in oneself are the key to crack GATE. He listed out the benefits of doing Mtech at IIIT(Hyderabad).

-Global Exposure.

-Professors from foreign and other universities come to teach us.

-Good pay package and also if a professor likes your project he may hire you and can give you a job in his lab/startup.

Texas instruments gives stipend upto Rs.21000/-.

There are generally 12 courses in M.Tech/ME at IISC .But we can concentrate on particular field by doing only 4 courses in 3 years through MSc. We also have a chance to do Direct PhD there .Course time is 6 years and we will get a Dual degree (M.Tech and PhD).IISC also offers Internship during MAY-JUNE for 45 days in which they will provide us food,

EVENTS

allowances and accommodation. If you perform well they might give you a job as well. What you need is that you must be from a good “ college , GATE rank and CGPA”. You already have the first one. “In order to achieve anything we need to have mental strength”

He stated. “I studied everything except few subjects like signals and systems in the first 10 days. I left that because I did not understand those concepts. And I went through 10 years of GATE question papers and noted down the mistakes I did .When I was solving Mock tests I only attempted the difficult questions and learnt how to solve them.”

he explained about his preparation for the GATE examination during the leave he took for 20 days when he was working in CTS. “True Education is the manifestation of perfection which is already within us , by which our character is formed and mental strength is improved” he quoted before concluding.

**Written and Edited by:-
S.Sheshasai Venkatesh
ECE A 3/4**

