KAMARAJ
COLLEGE OF ENGINEERING & TECHNOLOGY

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
Accredited by NAAC with 'A' Grade

DEPARTMENT OFELECTRICAL AND ELECTRONICS ENGINEERING

(ACCREDITED BY NBA, NEW DELHI)

SHOTS

APRIL-JUNE (2019)

16th Edition

WHAT IT SAYS???

- Vision and Mission
- Cruise Control System In Cars
- Car Which Can Run Both On Fuel and Battery
- Events happen in the department
- Guest Lectures delivered/ Seminar/ Internship/ Workshop/ FDP Attended by faculty members
- Honors and recognitions received by Faculties
- Achievements by Students
- Awards/medals for outstanding Performance in sports/cultural Activities by students
- Students industrial exposure
- Quote
- Gate Corner

VISION OF THE DEPARTMENT:

"To make the Department of Electrical and Electronics Engineering of this institution the unique of its kind in the field of Research and Development activities in the part of the world."

MISSION OF THE DEPARTMENT:

"To impart highly innovative and technical knowledge in the field of Electrical and Electronics to the urban and unreachable rural student folks through Total Quality Education."

HOW DOES THE CRUISE CONTROL SYSTEM IN CARS WORK?:

We are getting all sorts of excitement to go on a long road trip. Then we realize that the only one who can drive. A long, 1000-km trip lies ahead of us. The road is literally straight for hundreds of kilometers, and the thought of driving for 4-5 hours straight tires out before even get behind the wheel. Fortunately, the cruise control comes to the rescue.

Cruise control is an invaluable feature in modern ¬cars. Without it, long road trips would be far more tiring, at least for the driver. It's far more common to find cruise control on American cars than European or Asian ones, as the roads in America are generally bigger and straighter, and destinations are much farther apart.

What is Cruise Control?

The purpose of a cruise control system is to accurately maintain a speed set by the driver without any outside intervention by controlling the throttle-accelerator pedal linkage.

The earliest variants of cruise control were actually in use even before the creation of automobiles. The inventor and mechanical engineer James Watt developed a version as early as the 17th century, which allowed steam engines to maintain a constant speed up and down inclines. Cruise control as we know it today was invented in the late 1940s, when the idea of using an electrically-controlled device that could manipulate road speeds and adjust the throttle accordingly was conceived.

Working:

The cruise control system controls the speed of car the same way it do – by adjusting the throttle (accelerator) position. However, cruise control engages the throttle valve by a cable connected to an actuator, rather than by pressing a pedal. The throttle valve controls the power and speed of the engine by limiting how much air it takes in (since it's an internal combustion engine).

The driver can set the cruise control with the cruise switches, which usually consist of ON, OFF, RESUME, SET/ACCEL and COAST. These are commonly located on the steering wheel or on the windshield wiper or turn signal stalk. The SET/ACCEL knob sets the speed of the car. One tap will accelerate it by 1 mph, two by 2 mph and so on. Tapping the knob in the opposite direction will decelerate the vehicle. As a safety feature, the cruise control system will disengage as soon as we hit the brake pedal.

However, with the number of cars on roads increasing more than ever, the functionality of normal cruise control is becoming obsolete. Adaptive cruise control is quickly gaining popularity, and with good reason!

Adaptive Cruise Control is the next big thing in terms of automated speed management in new cars. It is an intelligent form of cruise control that slows down and speeds up automatically to keep pace with the car in front of us.

How Does Adaptive Cruise Control Work?

The driver sets a maximum speed similar to what one would do with normal cruise control. A radar sensor located in the front end of the car locates traffic ahead of it and locks on to the car ahead. This sensor then controls the speed of car so that it always stays 2-3 seconds behind the car in front.

Using the input from the radar sensors, the computer unit measures the distance of the car ahead and calculates the speed relative to it. If there are multiple vehicles in the sensor's field of coverage at the same time, it automatically selects which of the vehicles the system should track.

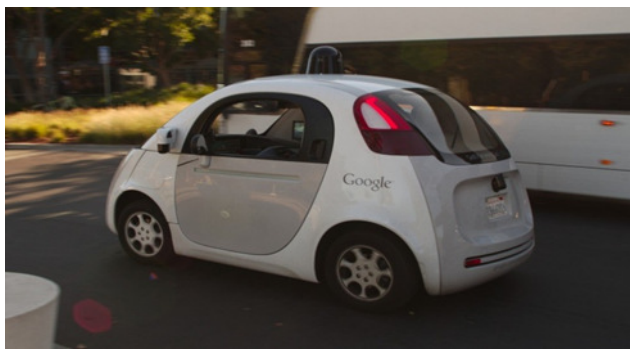
For instance, if we approaching a slower vehicle ahead or if another vehicle cuts in front of us, the adaptive cruise control slows down the car by initiating corrective controls in the engine management and, if necessary, in the braking system as well.

Working of Adaptive Cruise Control

ACC is very conscientious when it comes to safety. If we are driving too close to the car in front, it will warn us in two stages. First, it will alert with visual and acoustic signals, and then with a short braking jolt. If necessary, the system will bring the car to a complete stop. Some units employ a laser, while others use an optical system based on stereoscopic cameras. Regardless of the technology, ACC works day or night, but its abilities can be hampered by extreme conditions, such as heavy rain, fog, or snow.

Future applications of ACC

Google launched its self-driving car a few years back, which completely relies on the technology of autonomous cruise control.

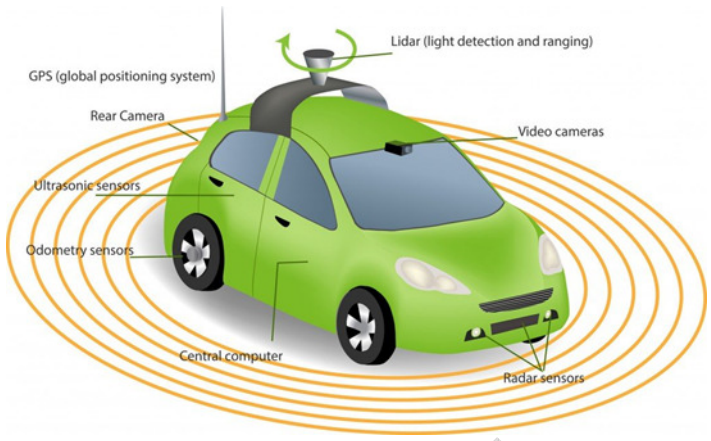


This car has a total of eight sensors. The most noticeable one is the rotating roof-top LiDAR – a camera that uses an array of 32 or 64 lasers to measure the distance to objects in order to build up a 3D map at a range of 200m, enabling the car to analyze potential hazards.

The car also sports another set of eyes in the form of a standard camera that points through the windscreen. This also looks out for nearby hazards, such as pedestrians, cyclists and other motorists, whilst also reading road signs and detecting traffic lights. The bumper-mounted radar, which is already used in autonomous cruise control, looks out for vehicles in front of and behind the car.

On its exterior side, the car has a rear-mounted aerial antenna that receives geo location information from GPS satellites, and an ultrasonic sensor on one of the rear wheels that monitors the car's movements. The interior of the car has altimeters, gyroscopes and a tachometer to produce even finer measurements on the car's position. All these sensors act perfectly in unison and obtain accurate data of the car's location, thus providing additional safety.

After rigorous testing, Google announced that its self-driving cars have covered over 700,000 miles (1.12 million kilometers) without a recorded accident caused by one of its vehicles (one was hit from behind, but the other driver was at fault). That's an incredibly impressive figure, considering how many accidents occur every day due to human error.



Autonomous cruise control will soon be mandatory in all future cars. Therefore, the next time we see someone asleep behind the wheel, don't get freaked out cruise control has it all figured out!

I'm just wondering how long will it take for cars to start making autonomous decisions and revolt against us 'puny' humans!

IS THERE A CAR WHICH CAN RUN BOTH ON FUEL AND BATTERY?

Any vehicle that uses electric power from a battery—in addition to conventional fossil fuel-powered engines—to run is known as a hybrid vehicle.

Mobility has been the most fundamental factor in all progress that humankind has ever made on the planet. Humans first began to move around on foot, and then came the most significant turning point in human existence: the wheel. By connecting two of these circular discs with a fixed rod, humans were veritably sprinting along the path of progress. They would later go on to harness the power—first manpower and then animal power—to pull and push these contraptions to get work done.

This trend of utilizing muscle power continued until James Watt employed steam to move objects around, opening the necessary avenues for engines as we know them today. As

We explored better alternatives for fuel, internal combustion engines that used petrol and diesel were invented.

The Turning Point:

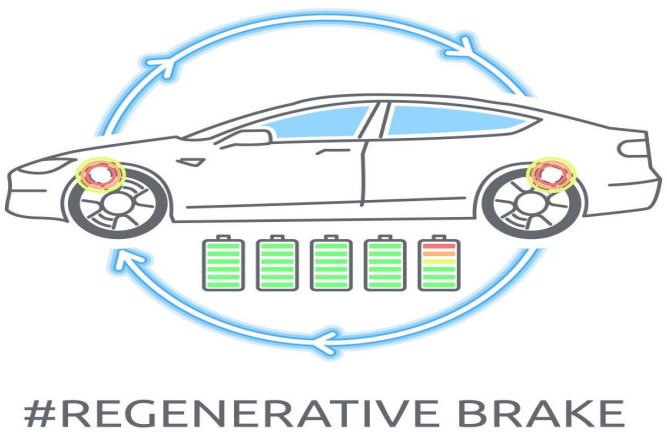
Fossil fuel has plenty of its own problems. Burning it generates a lot of unhealthy residues and is only available in limited quantities. Internal combustion engines result in extensive pollution due to the inefficient burning of fuel.

With an increase in our global population, the consumption of these fuels has increased, and consequently, so has the pollution, leading to a desperate search for more sustainable options.

Battery-powered vehicles:

In pursuit of cleaner and more viable options, car makers decided to keep electricity at the helm of those wheels.

However, batteries would run out. We had to either recharge them or replace them. With a toy car, this was easy. Inside a panel new batteries are placed and set off zooming again. This would be significantly more complicated in a full-size car, given that we need a big battery, many tools and the knowledge of how to change a battery safely. Also, waiting for car battery to recharge at a charging station, imagine the long queues and traffic jams that might result!



Toy car batteries are easily removable, but that is not the case with real cars. Thus, two product philosophies arose: fully electric and hybrid electric cars. The former have rechargeable batteries, now charge the batteries from a wall socket and drive around until they run out. The Tesla Model S has an electric range of a large 600 km!

The latter comprises electrical motors powered by batteries and works in conjunction with conventional combustion engines, hence the term "hybrid".

Types of hybrid vehicles:

Hybrid vehicles are classified into two types based on how their recharging process takes place:

Conventional hybrid:

The first type is conventional hybrid. A moving car has an ample amount of kinetic energy that is wasted in braking. Conventional hybrid converts this energy to electrical energy, which feeds into the batteries, thereby recharging them. This phenomenon is called brake energy recuperation. A Toyota Prius is a good example of such a car.

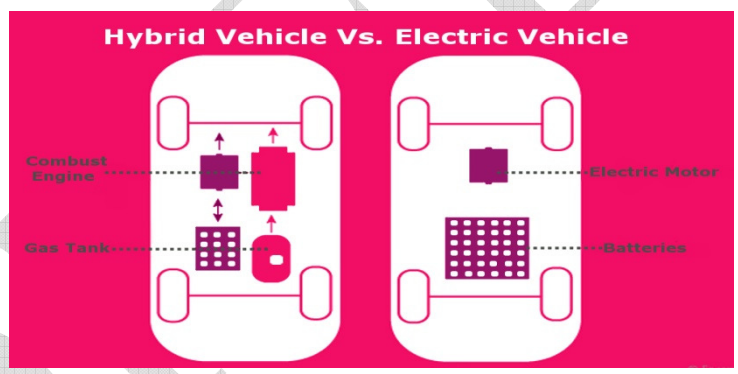
Plug in hybrid:

The second type of hybrid is called plug-in hybrid. These take the best of all three worlds, as they have brake energy recuperation, socket-based charging, and a combustion engine.

Example: BMW i8

How do hybrid cars work?

As stated earlier, a hybrid car has batteries working in conjunction with combustion engines. The battery is an essential but secondary source of power and is usually delegated for light duty such as getting the car moving, cruising at a constant speed and the like.



Heavy duty movement, such as climbing up steep slopes, can only be accomplished by IC engines .

Heavy-duty work, namely traveling up slopes or accelerating hard, is handled by the combustion engine. Sometimes, in order to achieve more performance, the electric motor kicks in along with the engine to help reach speeds that neither would be able to do alone.

So, we're still burning fuel, but less of it, and we don't have to worry about running out of battery in the middle of the road.

EVENTS HAPPEN IN THE DEPARTMENT

- Three Day Workshop on "**Basic Electrical Engineering**" during 04.04.2019 to 06.04.2019.
- Anna University Sponsored Six-Day FDTP on "**EE8591-DIGITAL SIGNAL PROCESSING**" during 06.05.2019 to 11.05.2019.
- Organized One day "Orientation Program" to all EEE students on 24.06.2019.
- Department got **Five Lakhs** Grant from AICTE to conduct "**International Conference**" during October, 2019.

GUEST LECTURES DELIVERED/ SEMINAR/ INTERNSHIP/ WORKSHOP/ FDP ATTENDED BY FACULTY MEMBERS:

- **Mr.T.Hariprasath AP/EEE** has attended the FDP- **"Introduction to Human Factors and Advanced Cognitive systems design"** on 06.05.2019 – 10.05.2019 at IIT Bombay.
- **Mr.Mariappan AP/EEE , Mr.S.Jegan AP/EEE , Mr.K.Ganesan AP/EEE** has attended the FDP- **"EE8591-Digital Signal Processing"** on 06.05.2019 – 11.05.2019 at Kamaraj College of Engineering and Technology, Virudhunagar.
- **Dr.M.Sudalaimani AP/EEE** has participated the workshop - **"Hands on training on Design of Robots and its applications"** on 16.05.2019 – 18.05.2019 at Mepco Schlenk Engineering College,Sivakasi.
- **Mrs.B.NoorulHamitha AP/EEE ,Mr.S.RajeshBabu AP/EEE, Mrs.V.Chandra AP/EEE , Mr.B.GuruKarthikBabu AP/EEE** has attended the FDP on **"EE8301-Electrical Machines-1"** on 20.05.2019 – 25.05.2019 at KLN College of Engineering, Pottapalayam.
- **Mr.S.Jegan AP/EEE** has attended the FDP on **EE8501-Power System Analysis** on 27.05.2019 – 31.05.2019 at Anna University Chennai.
- **Ms.S.Vimala Devi AP/EEE** has attended the FDP on **Advanced Topics in Power System Protection** on 27.05.2019 – 31.05.2019 at Indian Institute of Science Banglore.
- **Mr.D.Mariappan AP/EEE** has attended the FDP on **Power Electronics Converters for Renewable Energy System** on 12.06.2019 – 14.06.2019 at Kalasalingam University,KrishnanKovil.
- **Mr. D.Mariappan, AP/EEE** has delivered **Guest lecture on Police well Being** Programme held on 14.06.2019 at National Engineering College, kovilpatti.
- **Mr. D.Mariappan, AP/EEE** has delivered G**uest lecture on Current and Electricity** held on 22.06.2019
- **Mr.A.Karuppasamy AP/EEE** has attended the FDP on **"Emerging Power Conversion Techniques and Challenges for Renewable Energy and Electric Vehicle applications"** on 24.06.2019 – 28.06.2019 at NIT Trichy
- **Mr.D.Mariappan, AP/EEE**, **Mr.S.Jegan AP/EEE, Ms.S.Vimala Devi AP/EEE, Mr.R.Ganesan AP/EEE** have participated a workshop on **21st Century Teaching and Happiness in Work place** on 25.06.2019 – 26.06.2019 at Kamaraj College of Engineering and Technology
- **Mrs.C.Naga Devi AP/EEE, Mr.T.Hariprasath AP/EEE, Ms.R.Reenu AP/EEE, Mr.A.Karthikeyan AP/EEE** has participated on a workshop on **21st Century Teaching and Happiness in Work place** on 27.06.2019 – 28.06.2019 at Kamaraj College of Engineering and Technology.

HONORS AND RECOGNITIONS RECEIVED BY FACULTIES:

- **Dr.D.Prince Winston Professor/EEE** has awarded **Young Scientist Fellowship from Tamilnadu State Council for Science and Technology (TNSCST)** at NIT Calicut on 2019.
- **Mr.K.Ganesan AP/EEE** has received **Summer Research Fellowship** in IIT Delhi 2019.
- **Dr.D.Prince Winston, ASP/EEE promoted as Professor/EEE** by our College Management.

ACHIEVEMENTS BY THE STUDENTS:

- **Mr.K.DineshMoorthy 3rd year EEE-A** has awarded **International Yoga Festival Mass Yoga World Record 2019** at Own Choice Yogasana Championship on 25.05.2019
- **Mr.K.DineshMoorthy 3rd year EEE-A** has awarded **International Yoga Festival Mass Yoga World Record 2019** at AtheleticsYogasana Championship on25.05.2019
- **Mr.S.SankarVinoth 3rd year EEE-A** have awarded Internshala Student Partner on 20.06.2019

STUDENTS' INDUSTRIAL EXPOSURE:

- **Mr.A.Anandha Balaji 2nd year** has attended internship on **Embedded Techno Solutions**, Thane, Mumbai **Mr.M.Pravin 2nd year** has attended internship on National Institute of Technology, Trichy.
- **Ms.S.Dharani, Mr.S.Kabilan, Ms.S.Kiruba Colin Queen, Ms.P.Priyadharshana 2nd year** have attended internship on Phoenix Softech, Madurai.
- **Mr.P.Murali Krishna Pavas, Mr.A.Vijayvaratheeshwar 3rd year** have attended internship on **Kerala State Electronics Development Corporation Limited (KELTRON),** Trivandrum, Kerala.
- **Mr.V.Krishna kumar, Mr.S.Krishna kumar, Mr.P.Vinoth kumar, Mr.B.Ram kumar, Mr.R.Vignesh 3rd year** have attended internship on

Kerala State Electronics Development Corporation Limited (KELTRON), Trivandrum, Kerala.

AWARDS/MEDALS FOR OUTSTANDING PERFORMANCE IN SPORTS/CULTURAL ACTIVITIES BY STUDENTS

- **Ms.M.Devi Sridhivya Dharshini** 1st year has First Class in **Dahshin Bharath Hindi Exam** held on 01.03.2019
- **Mr.L.Maria Antony Xavier** 2nd year has got **first prize in paper presentation** at National Engineering College, Kovilpatti held on 01.03.2019
- **Mr.A.Anandha Balaji** 2nd year has got **first prize in paper presentation** at National Engineering College, Kovilpatti held on 01.03.2019
- **Mr.A.Anandha Balaji** 2nd year has got **Second prize in Best Manager Contest** at National Engineering College, Kovilpatti held on 01.03.2019
- **Mr.A.Anandha Balaji** 2nd year has got **Second prize in Engineers Eye Contest** at National Engineering College, Kovilpatti held on 01.03.2019
- **Mr.M.Gurudhachana Moorthy** 2nd year has got **second prize in paper presentation** at Thiagarajar College of Engineering, Madurai held on 07.03.2019
- **Mr.G.Dhakshin Surya** 2nd year has got **second prize in paper presentation** at Thiagarajar College of Engineering, Madurai held on 07.03.2019
- **Mr.V.Dhanasekaran** 2nd year has got **second prize in Machinovation** at Thiagarajar College of Engineering, Madurai held on 07.03.2019
- **Mr.K.Sathish Kumar** 2nd year has got **second prize in Machinovation** at Thiagarajar College of Engineering, Madurai held on 07.03.2019
- **Mr.J.Vinod** 4th year has got **first prize in Poster Presentation** at ORA 2019 held on 08.03.2019
- **Mr.M.Gurudhachana Moorthy** 2nd year has got **first prize in paper presentation** at Kalasalingam University on 23.03.2019
- **Mr.V.Dhanasekaran** 2nd year has got **Second prize in paper presentation** at Kalasalingam University on 23.03.2019
- **Mr.K.Sathishkumar** 2nd year has got **second prize in paper presentation** in Kalasalingam university on 23.3.2019.
- **Mr.M.Pravin** 2nd year has got **first prize in poster presentation** in Kalasalingam university on 23.3.2019.
- **Mr.M.Pravin** 2nd year has got **first prize in circuit debugging** in Kalasalingam university on 23.3.2019.
- **Mr.Gurudhachanamoorthy** 2nd year has got **third prize in Technical Quiz** in Kalasalingam university on 23.3.2019.
- **Ms.V.Rithi Andal Pooja** 3rd year has got first **prize in project presentation** in Kalasalingam university on 23.9.2019.

QUOTES OF THE DAY:

When WHY is clear, the HOW is easy

GATE QUESTIONS:

If the primary line voltage rating is 3.3KV(Y side) of a 25KVA. Y-Δ transformer (the per phase turns ratio is 5:1), then the line current rating of the secondary side (in ampere) is _____

ANSWER:

GIVEN

25KVA, Y-Δ, $N_1 : N_2$=5:1

$I_{ST}=\frac{25\times10^3}{3.3\times10^3\times\sqrt{3}}$

$I_L=I_{PH}$=4.374 Amps

Transformer is a constant power device

$E_2I_2 = E_1I_1$

$N_2I_2=N_1I_1$

$I_2 = \frac{N_1}{N_2}\times I_1$

$I_2=\frac{5}{1}\times 4.374$

$I_{PH}=I_2$=21.869←Δ−side

$I_L=\sqrt{3}\times21.869$=37.879 Amps

The line current rating of the secondary side is

37.879 Amps