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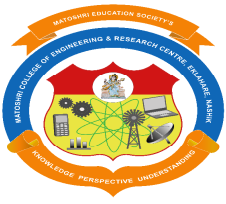
Vision

"To Establish Omnipotent Learning Centre Meeting the Standards to Evolve as a Lighthouse for the Society."

Mission

- Setting up state-of-the-art infrastructure
- Instilling strong ethical practices and values
- Empowering through quality technical education
- Tuning the faculty to modern technology and establishing strong liaison with industry
- Developing the institute as a prominent center for Research and Development
- Establishing the institute to serve a Lighthouse for the society

Quality Statement

"We, Matoshri College of Engineering & Research Center are committed to practice a system of Quality Assurance that inculcates quality culture, aiming at quality initiation, sustenance and enhancement of quality comprehensively ultimately leading the institute as Center of Excellence."

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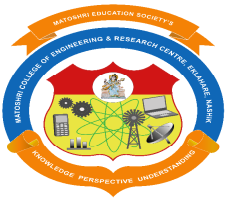| Mechanical Bird Flapping Mechanism	J.H.Bhangale

The purpose of the flapping mechanism is to convert the rotary motion of the motor into the reciprocating motion of flapping wings. There are many ways to do this, and we will describe only some of the more common ones here. The mechanism must be lightweight and fairly simple. Yet it must also provide a fairly symmetrical wing motion so the ornithopter flies straight. Most mechanisms is called a "four-bar linkage". There is a rotating crank shaft, driven by the motor. As the crank goes around, the connecting rods push the wings up and down. Unfortunately, when a second wing is added, this mechanism will produce asymmetric flapping. The two connecting rods leave the crank at different angles. This causes them to act at different times. The asymmetric flapping lowers the efficiency and makes the ornithopter want to turn to one side. There are several ways to improve the symmetry.

1. Staggered Crank
2. Outboard Wing Hinge
3. Dual Cranks
4. Transverse Shaft

The bird Flapping Machine is based on dual cranks mechanism. It involves the use of two separate cranks and an additional drive shaft and gear. This mechanism will probably weigh a little more than the outboard wing hinge mechanism, but the flapping will be more symmetrical. The frame is mostly made of Mdf while the gear is made of mild steel or plastic.

Components

- Gears
- DC Motor
- Connecting Rods
- Shafts
- Base Frame
- Supporting Frame
- Mounts and Joints
- Screws and Bolts

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DIY Automatic Screen Printing Machine	D.D.Palande

The basic process of screen printing involves creating a stencil on a mesh screen and then pushing the ink to create and imprint the design on the below surface. The most common surface used in screen printing is paper and fabric, but metal, wood, and plastic can also be used. This is a manual process that involves an operator manually placing the object to be printed upon, then placing a screen/stencil on top of the object and then pushing the ink over the surface to print the screen. Well here we automate this process using a smart mechanism for screen printing.

The system provides the following advantages:
• Automatic Screen Placement
• Automatic Ink Pushing over Screen
• Minimum Manual Efforts
• Faster Process

The system makes use DC motors, Connecting Arms, Ball Screw Mechanism, Gears, Shafts, Bearings, Couplings and electronics sensors and circuitry to develop this system. The system makes use of a witch operated screen printer system coupled with a gear based motorized lifting motion for screen placement. The system first makes use of a switch to operate the screen placement mechanism. This mechanism is used to lower and lift the screen mesh mechanism over the object. On operating the switch, the machine operates a DC geared motor that has a gear attached to its shaft.

when this Motor rotates, it rotates the corresponding gear which in turn lowers or lifts the screen on top of the object. The screen mechanism now lands on 2 spring assist poles. These support poles are used to provide a lift after a print is successfully done. Once this mechanism is lowered on the object we can now operate the other DC motor that prints on the object. For this mechanism the DC motor shaft is connected to a Screw that is connected on a bearing on the other side. We now have a nut on the screw that is connected to the ink pusher slide.

This mechanism acts like a horizontal slider used to slide the ink over the screen. On operating this motor using a switch, the slider smoothly slides and pushes ink over the screen for printing. Thus the system allows for a smooth and automatic screen printing mechanism.

Components

• DC Geared Motors
• Spring & Support Rods

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- Ball Screw
- Gears
- Linkages and Arms
- Shafts & Coupling
- Bearings
- Switches & Buttons
- Atmega Microcontroller
- PCB Board
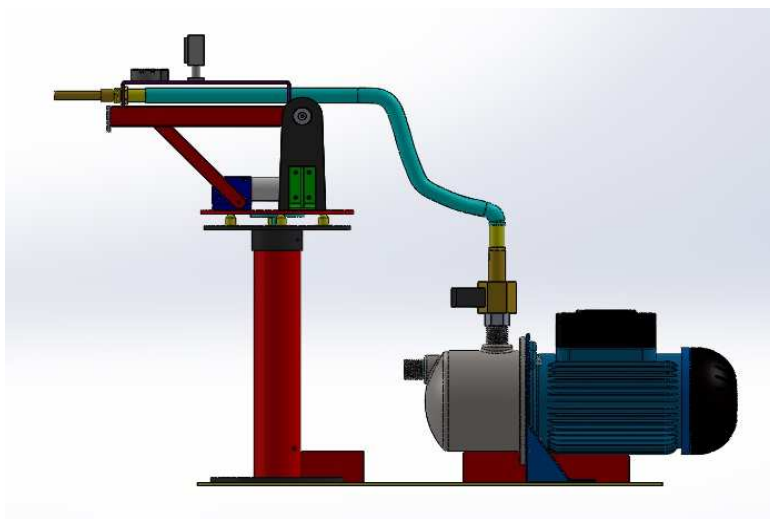- Resistors
- Capacitors

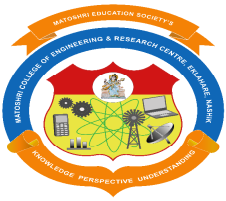## 360 Degree Rotating Fire Protection System   N.C.Ghuge

Large factories, warehouses, and industrial production facilities always run the risk of fires breaking out. Lack of appropriate firefighting measures could result in disastrous consequences and along with financial losses and might even lead to massive loss of human life. Usual fire protection systems installed in buildings have the following disadvantage

- They spray small amounts of water from each sprinkler which may not be enough to put out the fire.
- The sprinklers are not targeted and spray an entire floor or building ruining computers, furniture and paperwork.
- While this sprayer gun can spray water in desired qty only at fire outbreak point to stop fire without ruining complete office furniture and electronics.
- This demo version is made to be remote controlled from few meters but future version will operate remotely from fire dept.

Fire monitors and sprayers are an amiable and controllable high-capacity water jet used to deal with large fires. Unlike Fire extinguishers, Fire Monitors are permanently installed and cannot be moved. While traditional fire monitor systems need a human operator to change the direction of the water jet and aim it appropriately, this fire monitor has been equipped with RF control and an onboard camera. Thereby allowing the user to operate it from a safe distance. The

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system makes use of 2 x Motors coupled with a powerful sprayer motor with piping system and onboard wireless streaming camera to run this system. The 2 motors are used to control the nozzle direction movement. The user may use a wireless remote to transmit movement commands. The receiver circuitry mounted on system receives user's commands and operates the motors to achieve desired motion. Also the receiver operates the pump motor to start and stop the spray. The sprayer nozzle can also be adjusted to adjust the water spray outlet. The sprayer mechanism is built to operate in a 2 DOF operation to adjust position in x and Y directions and achieve a 360 Degree water spray coverage.

Components

- Pump Motor
- DC motors
- Controller Remote
- Receiver Circuitry
- Pipings and Nozzle
- Pipe Joints and Fittings
- Bearings
- Rotating Frame
- Base Frame
- Supporting Frame
- Screws and Bolt

Mini 20 Liter Solar Water Heater for Rooftop   V.S.Daund

Water heaters consume a large amount of electricity for heating water. Traditional heaters require heating coils to heat up water using a minimum of 2000Watt for the process. Well when we use solar energy for water heating it requires around 30 to 50 watt of power saving more a lot of energy. We can develop a more efficient solar water heater to heat up water at a faster rate using efficient coiling along with heat trapping and reflecting mirrors. The water heater can more efficiently heat up water at a faster pace than traditional solar water heaters.

The system makes use of steel pipes coiled together for passing water through them. The pipes are heated by solar rays directly falling on them. We additionally use a metal plate behind the pipes with a black paint to absorb the rays passing through in between pipes. Over this we use 2 additional reflective sheets to gather and reflect additional solar rays over the pipes. This system heats up the pipes thus heating up the water passing. We now have a water tank for water storage. The system makes use of a Pump motor to pump water through the pipes. It is a low power motor which needs external power supply of up to 50 Watts. The motor drives water

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from the pipes through the heating pipes and right back into the tank thus heating the water continuously. The water in the tank can then be used through a third outlet for usage. Thus the system provides a highly efficient solar water heater that saves over 99% energy as well as serves warm water instantly.

Approximate Dimensions: 550 x 440 x 400 mm (L x W x H)

Components

- Steel Pipes
- Water Tank
- Pipe Connectors
- Pipe Fittings
- Water Pump
- Reflector Sheets
- Back Sheet
- Hinges
- Supporting Rod Pipes
- Mounts and Joints
- Base Frame
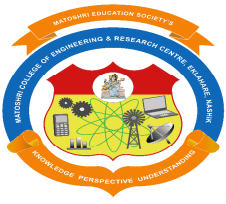- Supporting Frame
- Screws and Fitt
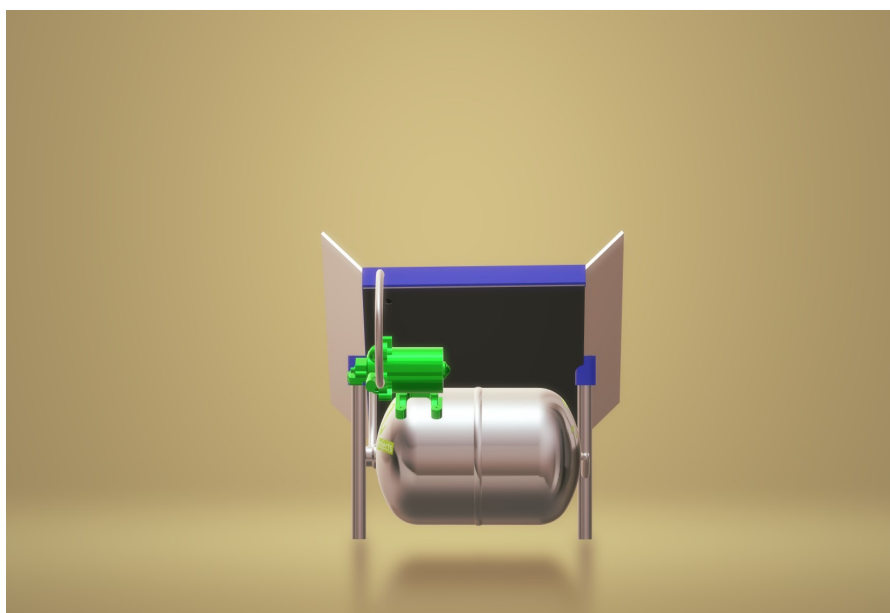
20 Litre Jar Automatic Cleaning and Washing machine   Y.K.Mogal

Bottle washing machines is mainly used by a number of industries for quick and efficient use and for washing, bleaching and drying of bottles before filling it with solution, liquids, or powders. Because bottle washing is a job that permits not a single mistake in terms of hygiene and product safety. And at the same time, it demands economical utilization of water as a valuable resource. So, the whole articles is made using SS (stainless steel) frame. There is a water pump placed under the bottle stand which is used to force the water from the lower level (tank) to the rinse rod. When the button is pressed the pump gets on and the water forcefully flows inside the bottle through the rinse rod. And then water is then collected or thrown out by the pipe connection underneath the bottle

Components

- Water pump
- PVC pipe fittings

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- SS frame and fittings
- Bottle stand

Design and Fabrication of Vertically Wall Climbing Glass Cleaning Robot
G.D.Katale

This glass cleaning robot article proposes a glass-wall climbing robot that is intended for cleaning the glass wall surface. It is based on passive suction cups mechanism. The efficient wall climbing robot moves in vertical direction on ceiling surfaces. Wall climbing robot has the ability to climb on walls, walk ceilings and also can move on the surface of the earth. Centrifugal impeller is employed that generates the low-pressure space for correct adhesion on the vertical wall surfaces. No good protection is needed that is the main advantage of this wall climbing robot. It requires vacuum impeller to create a vacuum and suction motor which rotates the impeller with very high speed and creates a vacuum for adhesion system of the wall climbing robot. In centrifugal impeller, air enters from the eye of the impeller and exits radially. The inlet area where the air enters creates negative pressure and this is the required adhesion pressure, which is quite helpful for proper adhesion system. An impeller may be a rotating part of a centrifugal pump, typically fabricated from iron, steel, bronze, brass, metallic element or plastic. The suction pressure can be easily generated by impeller with backward curved vanes.

Components

- Electric Ducted Fan unit
- DC geared motors
- Wheels
- Low weight plastic chassis
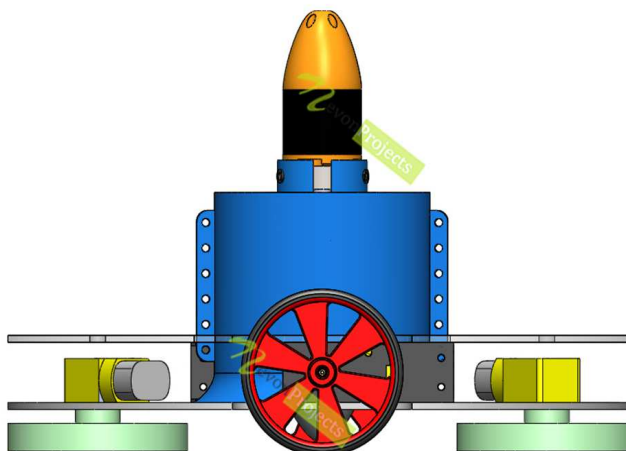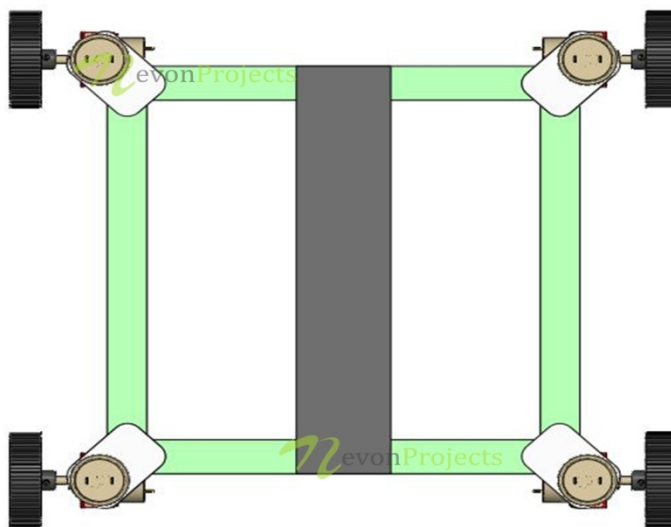- Lipo battery

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Fig :-Vertically Wall Climbing Glass Cleaning Robot

360-Degree Rotating Vehicle	Y.S.Khadke

This article is about 360-degree rotating vehicle. This vehicle moves in all directions and this design provides better comfort and also saves the time, most of the people uses this vehicle to carry goods, emergency patients etc. The normal wheel vehicles face lot of problems like parking, U turn and much more which consumes more time. So, we have designed a 360-degree wheel rotating vehicle to reduce and eliminate problems in the industry as well as common life of people. The vehicle can take a turn without moving the vehicle. No extra space is required to turn the vehicle. In this system, each of the 4 wheels has given drive with DC motors, so it can rotate 360 degree. 360-degree rotating wheel is controlled by RF remote. Consequently, we can utilize this 360-degree rotating vehicle from various perspectives like to transport things overwhelming bags and furthermore in vehicles, which will help in decreasing rush hour gridlock and spare time.

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| Plant Irrigation Water Sprinkler Agriculture Robot	P.K.Sonawane

Irrigation systems require large piping setups along with many sprinklers in order to achieve proper irrigation. This plant irrigation system has many problems associated with it. It requires expensive piping as well as sprinkler costs along with high powered motors in order to drive water through such long pipes. There is always a chance of leakages that may cause an oversupply of water to a particular area and undersupply in another leading to plantation loss. Also, this will incur heavy repairing costs. Our proposed system uses a robot with an automatic sprinkler using Atmega 328 microcontroller that moves through the field with a water tank that sprays water all over the field. This robot is powered by Atmega 328 microcontroller it consists of robotic chassis, wheels, pipes, sprinkler, Electronic Circuit, RF sensor, and ultrasonic sensor. This robot can be operated using two different modes, by using RF remote in which it will help to move the robot manually in which we can turn on sprinkler wirelessly whenever we want. Another mode is an autonomous mode in which robot will move automatically and it will detect obstacle using ultrasonic sensors. In this automatic plant watering system is being used by keeping the water pump on. This robot is made up of steel, it has motors with rough terrain wheel which can take full 360-degree rotation from both sides as it moves in front and backward direction.

- Parts
- Robotic Chassis
- Wheels
- Pipes
- Sprinkler

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- Electronic Circuit
- Ultrasonic sensor
- RF sensor
- Atmega controller
- Motor driver
- PCB
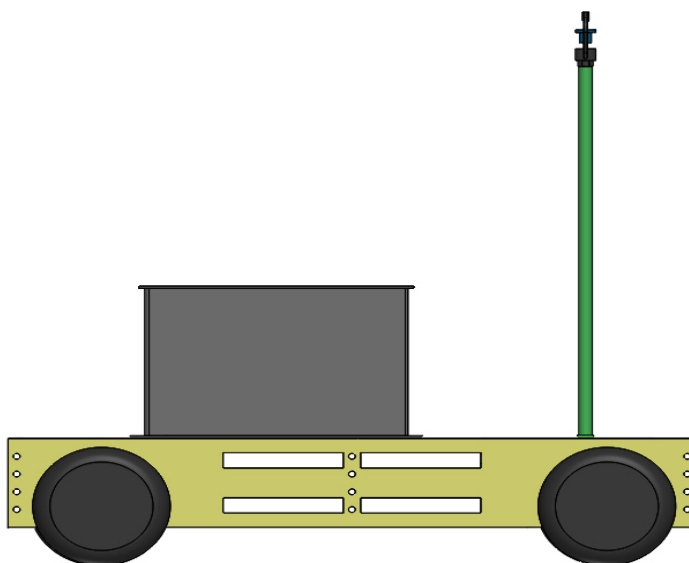
Fire Fighter Robot with Night Vision Camera   T.T.Kapade

The advanced Fire Fighter Robotic Vehicle with Night Vision Camera allows a user to control a fire fighter robot equipped with water tank and gun remotely wirelessly for extinguishing fires. For this purposes the system uses an Rf remote for remote operation along with rf receive based microcontroller circuit for operating the robotic vehicle and water pump. The receiver circuit receives RF signals through RF based remote transfer user's commands. The receiver circuit now decodes the data commands sent. It then forwards it to the microcontroller. Now the microcontroller processes these instructions and then instructions the vehicle motors to run the vehicle in desired directions. It also operates the water pump motor and pump direction motor to spray water based on users commands. This allows the user to operate the robot and put off the fire by standing at a safe distance. This robot body also has a wireless night vision enabled camera mounted over it. This night vision camera helps to direct the robot body in whichever direction as needed. This is because whatever area that will be captured by this wireless camera can be viewed in PC for reference. The robot operates within a 8 meter range of the remote.

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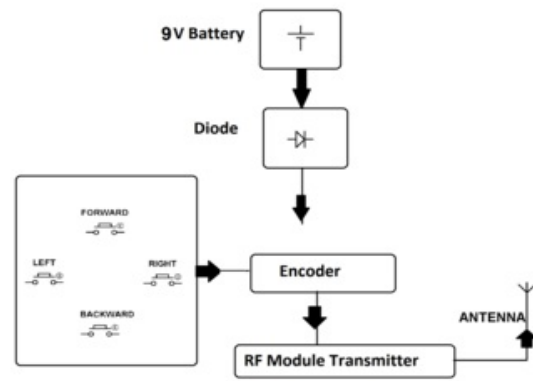Recognition of 2(F)/12(B) from University Grant Commission (UGC).
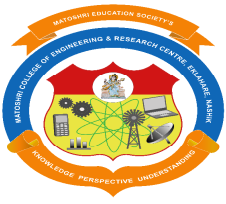
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Thus this system helps to extinguish fire from a safe distance with the help of the water tank attached to the robot body.

Hardware Specifications

- 8051 Microcontroller
- Robotic Chassis
- RF Tx Rx
- DC Motor
- Motor Driver IC
- Vtg Regulator IC
- IC Socket – Buy IC Sockets Online
- Crystal Oscillator
- Resistors
- Capacitors
- Transistors
- Cables and Connectors
- Diodes
- PCB and Breadboards
- LED
- Push Buttons
- Switch
- IC
- IC Sockets
- Water Tank
- Wireless Camera
- Spray Tube
- Spray Pump
- Software Specifications
- Keil µVision IDE
- MC Programming Language: Embedded C

Transmitter

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Key factors for implementation of total quality management in construction Sector: A system dynamics approach **Mr. R. R. Kshatriya**
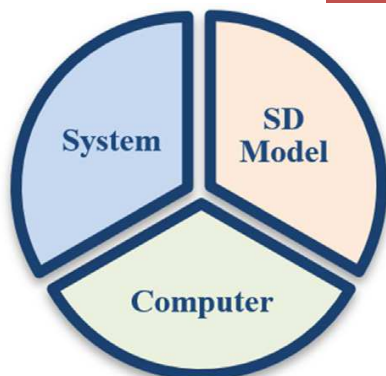
Maintaining quality in construction projects is paramount to project success, achieved through techniques such as Total Quality Management (TQM). However, the key factors of TQM implementation in the construction industry of developing countries are not well explored. Accordingly, this paper evaluated the causative relationship and intricacies of TQM implementation in the construction sector of developing countries. A total of 28 key factors of TQM were captured through a literature review. Thereafter, 12 significant key factors were shortlisted. Lack of top management commitment, poor customer/ client satisfaction, inadequate quality of education regarding TQM, and ineffective organizational quality culture emerged as impediments to implementing TQM in the construction sector. A Causal Loop Diagram (CLD) was developed to represent interrelations between the 12 shortlisted factors. In addition, a system dynamics model (SDM) was developed. The simulation results of the developed SDM indicated an increase in TQM implementation over the period under the defined system.

The construction sector is complex, nonlinear, dynamic, and fragmented. Causality is an important characteristic of this sector . The construction industry significantly contributes to

the economic growth and social development of developing countries Maintaining quality in the construction sector is the rudimentary element for achieving strategic competitiveness, employee empowerment, employee involvement, customer repetition, diminishing rework, continuous improvement, increasing productivity, enhanced budget performance, and comparatively more desirable schedule performance. Different quality management techniques such as total quality management (TQM), six sigma, top-down and bottom-up approach, implementation of the international standard organization codes (ISO), cost of quality, Kaizen, etc., have been utilized for the management of construction project quality.

TQM is a quality management technique that aims for longt erm success through customer satisfaction. The main impediments to implementing TQM in developing countries include the absence of top management commitment, inadequate expertise, low bidding contract award concept, undervalued education and training, lack of workers involvement, lack of workers empowerment, rigorous attitude and behavior, and rigid approach of executives towards quality management system (QMS). The contributing challenges of TQM implementation related to the work environment are an unproductive quality system, excessive paperwork, inadequate knowledge of the process requirements, and the high cost of implementing TQM in the construction sector.

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Testing methods and design specifications for CFRP-prestressed concrete members: A review of current practices and case studies Mr. P. S. Sathe

This article presents a synthesis of test methods and design specifications in regard to concrete members prestressed with carbon fiber reinforced polymer (CFRP) composite tendons. Unlike other state-of-the-art articles handling laboratory experiments and numerical modeling, practical contents are collated and appraised for the benefit of structural and materials engineers who are interested in adopting this nonconventional technology. Various experimental approaches are synopsized, including sampling requirements, property measurement, load-bearing capacity, bond strength, and time-dependent characteristics. As far as implementation is concerned, specific design provisions are reviewed and their applicability is evaluated against recent
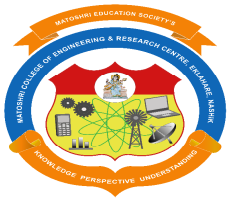
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research findings. Emphasis is placed on prestressing limits, flexural and shear behavior, serviceability, and embedment length. To assist practitioners' understanding of manufacturing procedures, representative applications are described with sequential pictures. Research needs are identified to address current challenges facing the prestressed concrete community.

Sustainable infrastructure is of primary interest from socioeconomic perspectives. Due to aging and aggressive service environments, a significant portion of existing structural systems are outdated and resources are required to maintain a certain level of safety. Among others, corrosion is a representative cause deteriorating concrete members. A recent study reports that the impact of corrosion is substantial and it has incurred a direct cost of over $558 billion in the United States, equivalent to 3.1% of the nation's gross domestic product (GDP) . Practitioners are therefore eager for seeking high performance and durable alternatives that can supersede conventional construction materials. Originated from the mechanical, aerospace, and military industries, carbon fiber reinforced polymer (CFRP) composites have gained the attention of structural engineers and active research is under way around the globe. Notable benefits of CFRP lie in corrosion resistance, favorable strength and modulus, light weight, and easy handling. The relatively high cost of the composites may be offset by savings from fabrication and preservation activities. As is the case with reinforced concrete, prestressed concrete elements constituting highway bridges and parking garages suffer from detrimental deicing salts alongside vehicular loadings, which can accelerate an electrochemical process for corrosion damage. Impaired steel strands precipitate the cracking and spalling of cover concrete, abate the bond with a substrate, degrade tensile strength, and facilitate prestress losses. To surmount these challenges, CFRP tendons may replace steel strands and a wide variety of research projects involving anchorage, deflection, deformability, non-prestressed auxiliary reinforcing steel.

1.Practical significance: Structural systems comprising prestressed concrete members are frequently used in modern society. In the early 1990's, CFRP tendons emerged as a substitute to conventional steel strands on account of their non-corrosive characteristics and high strength. However, despite significant advantages, these non-metallic composites have not been broadly adopted for several reasons: a lack of previous experience, limited design guidelines, a paucity of skilled workers, and budgetary constraints [29]. The present review is intended to impart practical knowledge on CFRP-prestressed concrete and to promote this proven technology for the sake of furthering infrastructure engineering.

2. Material aspects The composition of CFRP involves carbon fibers and a resin matrix. Given that the strength and stiffness of the composite are controlled by the configuration of embedded fibers, the orientation of fiber angles and a volume fraction ratio are crucial from a practical standpoint. A concise description of typical constituents is provided in this section together with

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engineering properties. 3.1. Carbon fiber Unidirectional carbon fibers are prevalent for prestressed concrete elements. Individual fibers possess a diameter of 5–10 micrometers with a density of 1.8–2.2 g/cm3, including a tensile strength of 2400 MPa to 6600 MPa and an elastic modulus of 230–827 GPa . The amount of fibers in a CFRP composite is thus a dominant factor for determining mechanical properties. It is acknowledged that the durability of carbon fibers is superior to that of other fiber types (e.g., glass, aramid, and basalt)
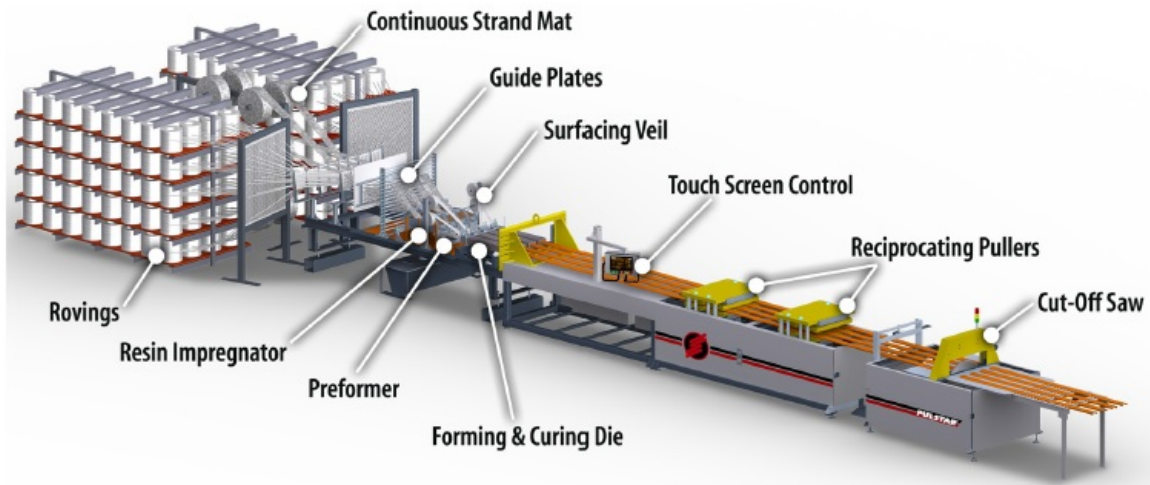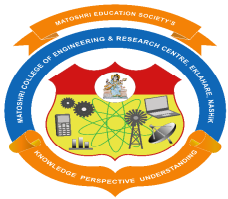

Fig. 1. Pultrusion process (image courtesy of Strongwell).

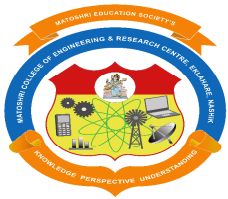| Texture analysis of the microstructure of internal curing concrete based on image recognition technology	Mr. A. A. Thakare

 Mechanical properties of internal curing concrete are greatly affected by its physical properties such as water content, cementing material content, porosity, and saturation. At the micro- level, such impact is finally reflected in the surface texture of its materials. In this study, the image recognition technology was used to find that the internal curing concrete samples have significant micro morphology and texture features. A texture parameter–strength model was established based on the relationship between Tamura texture parameters, gray level co-occurrence matrix (GLCM) texture parameters, and the mechanical strength. Due to the sensitivity of material properties and parameters, in terms of Tamura texture characteristics, coarseness, regularity and directionality are effective parameters for predicting the compressive strength of internally curing concrete. In terms of the GLCM texture, energy, correlation, entropy, and contrast are effective parameters to predict the compressive strength of the internal curing concrete. Correlations between each texture parameter and compressive strength follow different laws.

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With the increasing demand for concrete in engineering construction, the superiority of high-strength concrete in water conservancy, bridges, ports and other projects have become increasingly prominent. Compared with normal concrete, high-strength concrete features a lower water–binder ratio and a higher cement content. It also enjoys higher strength, impermeability, and durability, since it contains some ultrafine mineral admixtures such as silica fume and fly ash. Previous studies about concrete materials' properties are primarily based on macro-mechanical experiments. However, the macro-properties of materials are determined by their microstructures, and the changes in micro morphology are ultimately reflected in the texture features of the materials. Therefore, studying the micro-properties of materials can allow us to their macro-deformation and failure mechanisms under different stress–strain conditions. In recent years, modern detecting instruments have provided more possibilities for increasingly complex test conditions. The digital image-based modern detection methods have matured and computer processing and image analysis have been widely used in various fields of science and technology. Currently, most researchers have analyzed the pore structure of cement-based materials using the image processing technology; however, in these studies, an abundance of information contained in images was not used effectively, except for the gray leve used Image software to extract solid particles from mudslides automatically and found that this method can effectively retain the particles' size and roundness developed a pore (particle) and crack analysis system (PCAS). This system can obtain geometrical and statistical parameters of particles and pores. Yan et al. used a pore feature analysis system to extract pores in Ar-SEM images for quantitative characterization. Results showed that the pores are dominated by organic pores, intergranular pores, and intragranular pores elaborated on the rapid analysis method for concrete pores based on deep learning. This method has good operability and typicality, and can improve analysis efficiency, suitable for in-depth studies of the correlation between concrete pore structure and macro-performance. Generally, pre-processing such as contrast enhancement is needed before analyzing of concrete pore structures in an image. For example, first blackened the cut and polished concrete cross-section with a marker, and then filled the pores with nano-CaCO3 to increase the contrast. Using the image processing technology, extracted the total pore area, fractal dimension, weighted probability entropy, and other parameters to characterize the geometrical and morphological characteristics of the pores, and through the micro-parameters to characterize the macro-mechanical properties of the materials. Each material has own texture features. Image-based texture analysis has been widely used in various fields. Since wood is a typical texture-type object, there have been many studies on its texture features proposed a wood species classification method based on improved-Basic Gray Level Aura Matrix (I-BGLAM) texture features. They compared it with conventional texture feature recognition methods and found that this method increases the accuracy of wood species classification proposed a texture segmentation method based on the gray level co-occurrence matrix (GLCM), which can effectively segment the wood surface defect images. Barburiceanu integrated the eigenvector of the local binary pattern and the GLCM based

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method to provide information about the image mode and volume data such as contrast and uniformity. Cement-based materials also have significant texture features , and changes in their pore structure may result in different textures and texture features. However, there are few experiments and studies on the texture features of cement-based materials. The texture feature extraction method provides a feasible idea for cement-based materials' performance research. This paper explores the micro morphology and texture features of internal curing concrete. Different texture feature extraction methods were used to analyze the test results. Tamura texture and GLCM were used to extract texture parameters. These parameters were analyzed to capture their correlations with the material's macro-mechanical properties. A model between the texture parameters and mechanical properties of internal curing concrete materials was established, providing a basis for theoretical research on the relationship between the material's microstructure and macro-mechanical properties.

Characterization of the adherence strength and the aggregate-paste bond of prestressed concrete with siderurgical aggregates   Ms.N. P. Kushare

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Concrete with siderurgical aggregates (SA) is a sustainable construction material with great potential as structural concrete. For this reason, studies must be carried out on the behavior of concrete against prestressed elements, studies that open the door to new applications such as buildings, bridges or foundations. In this study, the feasibility of prestressed concrete is established with standardized adherence tests on beams reinforced with steel wires. The comparison between the concrete-reinforcement union of limestone concrete and concrete with siderurgical aggregates, has shown to be 23% higher in the case of the latter. This study is completed with the analysis of the paste-aggregate interface (ITZ) of both types of aggregate to support the results obtained in the adherence test. In addition, in order to know the bond strength of the pastes that incorporate SA, the micro-Vickers hardness of the pastes of the concrete mixes are determined, a hardness that has turned out to be proportional to the replacement of fine aggregates with SA.

The current policies of the European Union (EU), within the framework of the 2021–2030 strategic plan, promote economic growth through efficiency policies, clean energy, sustainability, and reduction in the use of natural resources. The latter can be applied by obtaining value from waste and by-products which, in the case of concrete (the most widely used construction material globally, can perfectly constitute its granulometric skeleton. Millions of tons of electric arc furnace slags (EAFS) are generated annually in the EU. A large part of this by-product still has no application, but after undergoing a recovery process (typically cooling, watering, crushing and screening it constitutes a high-quality aggregate (siderurgical aggregate) with which it is even possible to manufacture a structural high-performance concrete. Compared with concrete with conventional aggregates (mainly limestone and

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siliceous material), siderurgical aggregate concrete exhibits a substantial improvement in compressive strength and elastic modulus, mainly due to the higher elastic modulus of SA. The generalized improvement of the mechanical properties has been substantiated by the formation, between aggregate and paste, of a slightly porous interfacial transition zone (ITZ), in which the irregular shape of the aggregates and their high toughness favor a gear effect with the paste.

The good bond between aggregate and paste in concrete with SA would lead to the expectation of good adherence between aggregates and reinforcements (e.g. steel wires or steel bars), however, there are studies on this in the literature on reinforced concrete with SA. The mutual transfer of forces between the reinforcements and concrete is known as adherence and reinforced concrete is based on this. Adherence stresses are influenced by a variety of factors such as geometry, arrangement, corrosion and surface type of the reinforcement, nature of loads, boundary conditions, stresses in surrounding concrete or embedment length. If all the variables that depend on the reinforcements remain constant, bond adhesion will depend above all on the compressive strength of the concrete (since force is transmitted through adhesion, and failure can occur as a result of tensile and shear splitting), composition, consistency (the higher the consistency the higher the adhesion) and the gripping effect of drying shrinkage. If everything in the concrete is maintained constant except the type of aggregate, inevitably the adhesion strength will depend on the characteristics of these particles. A greater roughness of the aggregates will bring about greater friction with the reinforcement and thus greater impediment to the relative displacement between both. The way to experimentally characterize the adhesion capacity of concrete has traditionally been pullout tests and beam tests. The pullout tests have a series of disadvantages such as the overestimation of the bond capacity of the deformed bars due to friction from the rigid base plate laterally confined by the concrete cylinder. Another disadvantage of these tests is that failure by splitting of the concrete may occur at a load below the maximum bond capacity when ribbed bars are used.

Fig. 1. Particle size distributions of the aggregates used.
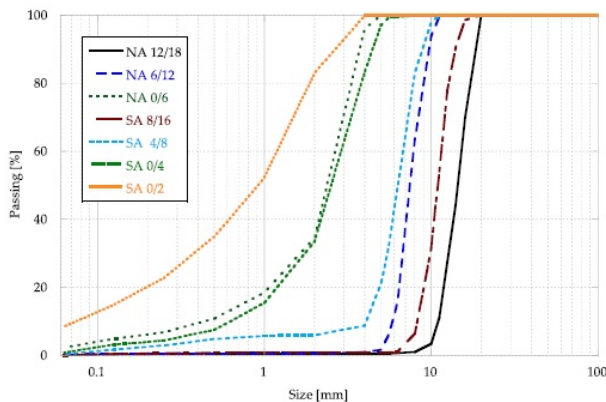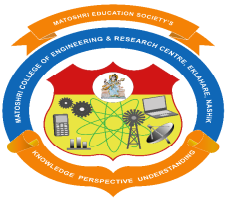
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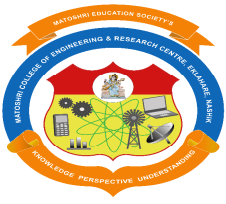
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The disadvantages of beam tests (e.g. ASTM A944) can be summarized in the difficulty in assembly and the need for a specific experimental setup. Regarding the quality of the adhesion bond, it should be emphasized that greater porosity of the ITZ with the reinforcement offers a space through which corrosion products can percolate. This corrosion in turn worsens the quality of the ITZ , although there are currently coatings (e.g. epoxy) that protect the reinforcements against corrosion. Regarding another critical aspect of concrete, namely durability, recent studies have shown that concrete with these siderurgical aggregates more than fulfills the requirements of permeability to oxygen and water under pressure, offering protection against corrosion of reinforcements and against accelerated carbonation, offering an excellent durability against wear abrasion and resisting the action of freeze-thaw three times more than limestone concrete

The present work focuses on the characterization of the adherence strength of concrete with SA, in comparison with a limestone reference concrete. The adherence test consists of measuring the penetration of prestressed steel wires in a beam, while also characterizing the mechanical properties of all concrete mixes. The ITZ of both types of aggregates is also analyzed to establish a relationship with adherence. The study is completed with the analysis of the hardness (in terms of micro-Vickers hardness) of the different concrete mixes, in order to know the bond strength of the pastes that incorporate various amounts of fine SA. The results obtained will make it possible to establish the suitability of reinforced concrete with siderurgical aggregates, whose use is not currently contemplated in any Spanish regulation, either nationally (Structural Cod or at the regional level within the three autonomous communities that pioneered the use of SA. Positive results would open the door to a new application for these sustainable concretes.

A comprehensive survey on Segment Routing Traffic Engineering	Mrs. A. D. Khairnar

Traffic Engineering (TE) enables management of traffic in a manner that optimizes utilization of network resources in an efficient and balanced manner. However, existing TE solutions face issues relating to scalability and complexity. In recent years, Segment Routing (SR) has emerged as a promising source routing paradigm. As one of the most important applications of SR, Segment Routing Traffic Engineering (SR-TE), which enables a head end to steer traffic along specific paths represented as ordered lists of instructions called segment lists, has the capability to overcome the above challenges due to its flexibility and scalability. In this paper, we conduct a comprehensive survey on SR-TE. A thorough review of SR-TE architecture is provided in the first place, reviewing the core components and implementation of SR-TE such as SR Policy, Flexible Algorithm and SR-native algorithm.

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Strengths of SR-TE are also discussed, as well as its major challenges. Next, we dwell on the recent SR-TE researches on routing optimization with various intents, e.g., optimization on link utilization, throughput, QoE (Quality of Experience) and energy consumption. Afterwards, node management for SR-TE are investigated, including SR node deployment and candidate node selection. Finally, we discuss the existing challenges of current research activities and propose several research directions worth of future exploration.

As an essential function of optimizing network services in many networks , Traffic Engineering (TE) has attracted continuous and widespread attention from both industry and academia. TE can be regarded as a set of solutions or strategies for effective traffic routing to improve network service quality. It usually encompasses the computation of optimized paths for the given source destination pairs, in order to achieve the optimization of network performance, e.g., improving network throughput and resource utilization, minimizing congestion.

So far, a great number of solutions have been proposed to implement TE. For example, link weights of Interior Gateway Protocol (IGP) can be appropriately configured to distribute traffic in a balanced manner, where traditional routing protocols like Open Shortest Path First (OSPF) or Intermediate System to Intermediate System (IS-IS) can be exploited. However, the optimal solution for link weight configuration has been proved to be NP-hard and thus, is computationally expensive. Besides, even though a near optimal solution is possible, the configuration of link weights can be complex notably in large scale networks. Multiprotocol Label Switching (MPLS) has been widely explored to implement TE, due to its explicit routing mechanism and capability to establish constrained paths. However, classic MPLS

TE depends on signaling protocols such as Resource Reservation Protocol

- Traffic Engineering (RSVP-TE) to establish end-to-end tunnels with reserved resources, thereby complicating its control plane. Moreover, it also suffers from the scalability issue due to the large overhead caused by maintaining and distributing per-tunnel state information across the network. By decoupling the data plane and control plane, as well as centralizing network intelligence in the controller, Software Defined Networking (SDN) has opened new opportunities for the innovative design of TE strategies. Successful examples include Google's B4 and Microsoft's SWAN. However, SDN requires to maintain per-flow state information on all switches, which consumes a great number of precious resources of flow table entries, restricting the scalability of TE in large scale networks.

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Fig. 1. Overview of this survey on SR-TE.

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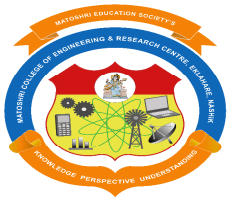| Solar Resource Sizing Considerations	Mr. Hadpe S. S

To predict solar energy system size accurately requires understanding the local solar resource. These resources can vary tremendously depending on location. The solar resource is available almost everywhere on the planet and more than adequate in most temperate and tropical locations to be utilized successfully. Locations where complete cloud cover occurs continuously during weeks at a time (e.g., tropical mountain rain forests) can present challenges and PV systems will have to be larger to meet energy needs. Some power can be generated even under overcast conditions, but it is just a fraction (<10%) of what is available during sunny, clear-sky conditions. Concentrating solar energy systems only work where direct sunlight is available. Vegetation, such as that found in a dry, arid region (e.g., cacti tend to grow where it is sunny and dry), can be a useful indicator of solar resource. Regions within the tropics have a less variable solar resource over the course of a year as compared to higher latitude temperate regions with long summer days and short winter days.

The solar energy system should be designed to fit the need with the seasonal solar resource. For an off-grid home, one may want to design a PV system for the winter season when there is less sunlight.

Water pumping needs often drop greatly during cool or cold winter months and increase during the hot and sunny summer months. This a natural correlation that bodes well for PV water pumping, when systems can be designed for best tilt to maximize usage for when the water is needed. Throughout the day and under stable atmospheric conditions, irradiance will vary, with minimum values at dawn and dusk and maximum values at mid-day. For example, on a clear day, the irradiance value at 9:00 a.m. will be less than the irradiance value at noon. This is explained by the Earth's rotation about its axis, which causes the distance traveled by sunlight through the Earth's atmosphere to be at a minimum at solar noon. At this hour, the Sun's rays are striking a surface perpendicularly and through the least atmosphere (exactly 1 atm). For practical solar energy system design and sizing, we consider the average energy available over a day; this is the insolation and corresponds to the accumulated irradiance over time. Insolation is typically provided in units of kiloWatt-hours per square meter. Normally, this value is reported as an accumulation of energy over a day.

Electrical Vehicle Advancement   Author: Mr. Aranke V. R.

To begin simply, the abbreviation EV generally refers to an Electric Vehicle (EV), a vehicle that is fully electrified with no internal combustion engine (ICE) whatsoever. All of the power that is provided is done through the electric battery, powering one or more electric motors to

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provide propulsion and power to all of the other systems on the vehicle. These are also sometimes referred to as battery electric vehicles (BEVs), both terms are used interchangeably. However, the same abbreviation EV is also used to mean Electrified Vehicles (EVs), which refers to vehicles with all forms of electric power support including microhybrids, hybrid electric vehicles (HEVs), plug-in hybrid electric vehicles (PHEVs), and battery electric vehicles (BEVs). For the purposes of this book, I will use EV to mean only electric vehicles. A PHEV is a vehicle that has both an electric propulsion system, generally ranging from 10 to about 40 miles of pure electric drive range, along with a combustion engine. This type of hybrid is often a parallel hybrid. In simplest terms, this means that the engine works in parallel with the electric motor. In this configuration, the electric motor is often "sandwiched" between the engine and the transmission. The benefit of the PHEV configuration is that it offers the full driving range that a comparable ICE vehicle would have—usually between 350 and 500 miles depending on the vehicle Similarly, the Extended Range Electric Vehicle (EREV), also referred to as a Range Extended Electric Vehicle (REEV) or sometimes as a Range Extender (REX), is considered a "series hybrid." In a series hybrid configuration, the electric motor(s) is(are) generally operated instead of the engine and the motors are not "in-line" with the engine, so you can use one or the other and sometimes both at the same time. In this configuration, the electric motors always power the vehicles propulsion; however, the power source switches between the electric battery and the ICE with the engine getting engaged and operating like a generator once the battery has reached a predefined minimum state of charge and keeping the battery voltage maintained at that preset level until the vehicle is recharged from the grid A common misconception of the PHEV and series hybrid configuration is that the engine will recharge the battery in this mode. This is not actually how they operate in the current designs. The engine will operate as a generator to power the electric motors but will only maintain the battery at its minimum state of charge until the vehicle can be plugged into the grid to recharge.

The term HEV refers to the most common configuration of electrified vehicles. These can range from the mild hybrid to a strong hybrid. A mild hybrid will have a smaller battery, usually less than one kilowatt hour (kWh), and will provide less electric power to the system, whereas a strong hybrid will have a slightly larger battery, often about 1.5 kWh, and will provide some minimal amount of electric propulsion in addition to powering some of the auxiliary systems. The term hybrid comes from the act of hybridizing of an ICE with a battery electric powered system, essentially creating a dual power system. In the hybrid car, the electric motor will generally provide power support throughout the operating cycle, but does not provide electric driving capability (mild hybrid) or at best only minimum electric drive capability (strong hybrid). During acceleration, the battery power will be added to that of the engine power to reduce the overall load on the engine, thereby improving fuel economy and reducing emissions.

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Smart Grid interoperability standards	Mr. R. C. Pawaskar

The Smart Grid, as previously stated, is basically the resultant of the transformation of conventional electrical power system network to a fully automated network as a consequence of equipping it with distributed intelligence together with broadband communication and automated control systems. A key requirement of the Smart Grid is the interoperability among its various digitally based components which may be called ''Cyber systems.'' Additionally it has been recognized that To get from today's electricity grid to tomorrow's smart grid with interconnection and full two-way communications connection to distributed energy sources such as wind, solar, and plug-in electric vehicles requires an interoperability framework of protocols and standards.

The only way to achieve interoperability requirements among the various components of the Smart Grid is through the use of internationally recognized communication and interface standards. It is expected that Smart Grid standards will cover the entire grid. This means there is a need for two types of standards, these are: (i) interoperability standards (top down) and (ii) building block standards (bottom up) . However, this chapter will address the issues related to interoperability standards as applied to the Smart Grid. Interoperability defined by the IEEE as ''the ability of two or more systems or components to exchange information and to use the information that has been exchanged.'' According to this definition it is vitally important to note that a digitally based device should not only have the ability to exchange information but it must also have the ability to understand the exchanged information so that it can use it properly and efficiently.

In order to highlight the importance of developing appropriate standards that enable the interoperability among digitally based devices/systems manufactured by different vendors (and therefore making them talking to each other), it would be useful to develop an analogy between interoperability of people (talking to each other) who speak different languages and digitally based devices/systems manufactured by different vendors. In this context, example of digitally based systems includes computer systems, and example of digitally based devices includes intelligent electronic devices (IEDs).

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E Mobility	Ankita Kahandal

Electro mobility (or e-Mobility) represents the concept of using electric powertrain technologies, in-vehicle information, and communication technologies and connected infrastructures to enable the electric propulsion of vehicles and fleets

History

Few people know that electromobility has its roots in the late 19th century. In Paris in 1881, the Frenchman Gustave Trouvé presented the world's first officially recognized electric vehicle: the Trouvétricyle. At this point, it still was still equipped with pedals.

Features

- Use electricity instead of gasoline
- Eco friendly
- Least expensive
- Future of transportation

Components

- Electric motor
- Controller
- Battery

- 1 lithium ion battery
- 2 Lead acid battery

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- 3 Nickel hybrid batteries

Working

- Controller takes power from battery to the motor
- It converts 300v DC to 240v AC
- Motor converts electrical energy to mechanical energy Challenges of e vehicles

1. EV cost and battery cost:

The cost is the most concerning point for an individual when it comes to buying an electric vehicle. However, there are many incentives given off by central and state governments. But the common condition in all policies is that the incentives are only applicable for up to a certain number of vehicles only and after removing the discount and incentives the same EV which was looking lucrative to buy suddenly becomes unaffordable. This tells that buying EV's no more be cheaper after a certain saturation point.

2. Beta version of vehicles:

Right now, both the technology and companies are new to the market and the products they are manufacturing are possibly facing real costumers for the first time. And it's nearly impossible to make such a complex product like an automobile perfect for the customers in the first go, and as expected the buyers ced many issues.

3. Temperature Issues:

Temperature can affect the performance of an EV battery at a large extent which makes EV's inappropriate for too cold (Uttarakhand, Meghalaya) or too hot regions like (Rajasthan, Kerala). The battery can give its ideal performance when it's in use under the temperature range of 15-40 degrees.

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4. Will increase the electricity demand at a national level:

It's just a matter of assuming the increment in electricity demand when everyone in the city is using solely electricity to charge their vehicle. It'll be a horrific increment in the demand for electricity and as of now, we are majorly dependent on burning fossils for generating electricity. Until we use renewable sources of energy for generating electricity the EV revolution will be of no use.

5. Environmental concerns:

The EV revolution is necessary for the most populated and polluted parts of India like Delhi, Mumbai, etc. but in such cities the major chunk of electricity is generated through burning fossil fuels which are equivalent to spreading the pollution through the ICE vehicle smoke, even most
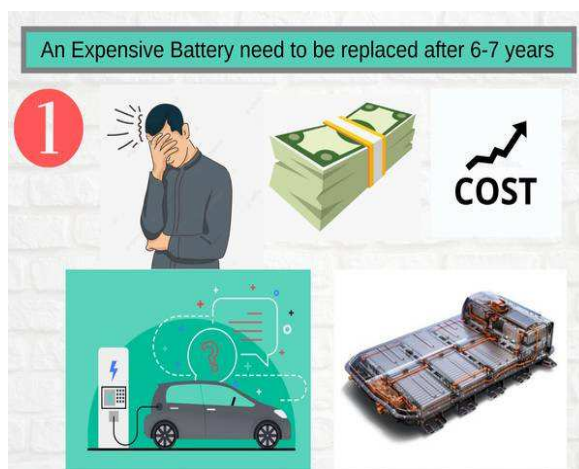
of the charging stations are reportedly operating upon diesel-driven electricity generator.

the only solution to the emission problem is to use renewable energy sources. (Like Solar power, wind energy, tidal power, etc).Shifting to renewable energy sources is equally important as shifting to electric mobility.

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6. Servicing is in danger:

Servicing and spare parts are some of the most important parts for any vehicle, especially for vehicles facing Indian roads. Also, the quality of material offered in new-age electric vehicles are of very low quality and upon which the companies are adding some very high-tech functionalities like onboard GPS, touch screen panels, extremely delicate sensors. In some unfortunate period if even a light or indicators damages, you won't have any other choice than replacing from the company itself (Which will be extremely costly). Because almost every company is using their costume made part in a highly vulnerable product like the vehicle it'll cost a lot in a long term for the vehicle owners if even a very small defect like breaking of light takes place.

Future scope of e vehicles

The future scope of anything highly depends on its demand. If we talk about the future of electric cars in India then it seems that it is quite bright. International automakers are planning to enter the Indian market. This gives a clear indication that electric vehicles will be the next big thing in the coming years, not only in India but across the world.Electric vehicles are the sustainable alternative to ICE (internal combustion engine) vehicles. The world is now looking forward to a carbon-neutral world.EVs will surely play a crucial role in attaining this goal up to a certain extent. The burning of fossil fuels through ICE vehicles has contributed loads of carbon to the environment. Today, the need of the hour is to find a proficient mode of transportation that does not harm the environment.

Conclusion

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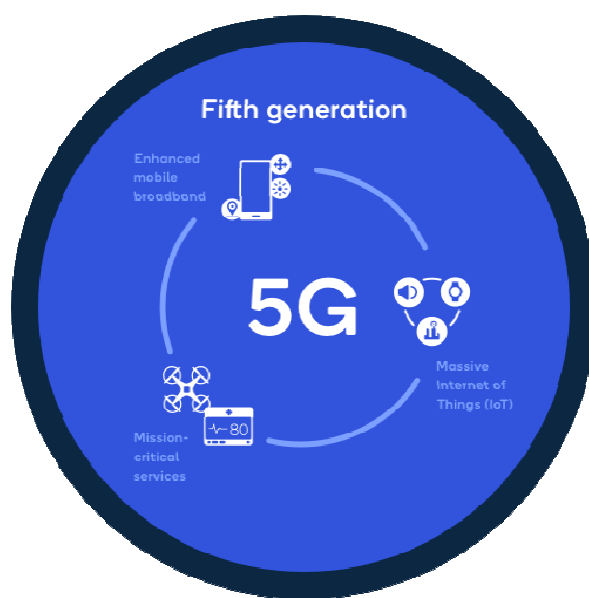
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Hybrid cars are definitely more environmentally friendly than internal combustion vehicles. Batteries are being engineered to have a long life. When the hybrid cars becomes more widespread, battery recycling will become economically possible.

References:

1) https://e-amrit.niti.gov.in
2) https://www.danfoss.com/en/about-danfoss/insights-for-tomorrow/e-mobility/
3) https://www.gartner.com/en/information-technology/glossary/electro-mobility-e-mobility
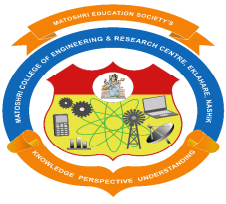
5G Technology	**Samadhan Tarle**

5G is based on OFDM (Orthogonal frequency-division multiplexing), a method of modulating a digital signal across several different channels to reduce interference.

Fifth-Generation technology, often known as 5G Technology is a new addition to broadband services. It aids the communication channel by providing higher speed, lower latency, and greater capacity. With the increase in the usage of mobile phones and the requirement for higher bandwidths of the internet, the next generation mobile communication technology, which is termed 5G or fifth- generation telecommunication technology comes into existence. The new networks have higher download speeds, eventually up to 10 gigabits per second (Gbit/s). In addition to 5G being faster than existing networks, it can

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connect more different devices and improve the quality of Internet services in crowded are Apart from providing ridiculously faster mobile broadband, 5G provides a network that is smart enough to understand the situation around the connected device.

With 5G technology, the concept of the wide **Internet of Things** is not just a theoretical topic but can be implemented practically. The 5G technology will change the way we interact with the devices like mobiles, appliances, and even cars.

What are the differences between the previous generations of mobile networks and 5G?

A: The previous generations of mobile networks are 1G, 2G, 3G, and 4G.

- **First generation - 1G**

  1980s: 1G delivered analog voice.

- **Second generation - 2G**

  Early 1990s: 2G introduced digital voice (e.g. CDMA- Code Division Multiple Access).

- **Third generation - 3G**

  Early 2000s: 3G brought mobile data (e.g. CDMA2000).

- **Fourth generation - 4G LTE**

  2010s: 4G LTE ushered in the era of mobile broadband.

1G, 2G, 3G, and 4G all led to 5G, which is designed to provide more connectivity than was ever available before.

5G is a unified, more capable air interface. It has been designed with an extended capacity to enable next-generation user experiences, empower new deployment models and deliver new services.

How and when will 5G affect the global economy?

A: 5G is driving global growth.

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- $13.1 Trillion dollars of global economic output
- $22.8 Million new jobs created
- $265B global 5G CAPEX and R&D annually over the next 15 years

Through a landmark 5G Economy study, we found that 5G's full economic effect will likely be realized across the globe by 2035—supporting a wide range of industries and potentially enabling up to $13.1 trillion worth of goods and service.

Which network will bring 5G in India?-Reliance Jio and Airtel are said to launch 5G services later this month. Vi (Vodafone-idea) is also working hard to launch its 5G services very soon.

Reliance Jio is also likely to make an announcement regarding its upcoming 5G network on August 15. In the first phase, 5G services will be launched in 13 Indian cities, including Delhi, Gurugram, Bengaluru, Kolkata, Chandigarh, Jamnagar, Ahmedabad, Chennai, Hyderabad, Lucknow, Pune, and Gandhinagar.

What about 5G launch in India?

5G launch in India: Three major telecom operators Jio, Airtel, and Vi are gearing up to launch

their 5G services in India soon. Some reports suggest that Jio and Airtel could

launch their 5G services as early as this month. While other reports suggest that 5G could launch in the country later this yea

Advantages of 5G Technology:-

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➢ 5G is designed to connect numerous embedded sensors virtually in low data, power and mobility.

➢ 5G technology works 10 times faster than 4G and so it is easier to download files/ videos just in seconds.

➢ Data rates of 5Gbps or more can be achieved.

➢ Decreases traffic load.

➢ Provides consistent and uninterrupted connectivity through the world.

➢ 5G provides 10 times decrease in latency.

➢ It is manageable with previous generations.

➢ It can give 3 times more spectrum efficiency

References:

1) https://www.qualcomm.com/5g/what-is-5g
2) https://www.cisco.com/c/en/us/solutions/what-is-5g.html
3) https://www.verizon.com/about/our-company/5g/what-5g

BIOCHIPS AND IT'S TECHNOLOGY   Shruti More

"Biochips"-The most exciting future technology is an outcome of the fields of Electronics, Computer science & Biology. It is a new type of bio-security device which track information accurately regarding what a person is doing.
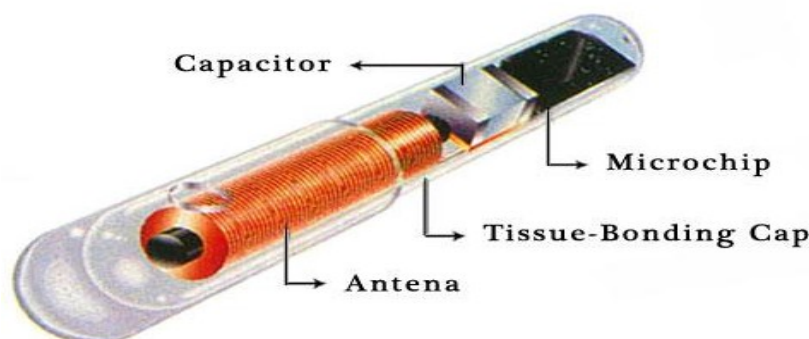

Biochips are any microprocessor chips that can be used in Biology.The biochip technology was originally developed in 1983 for monitoring fisheries. Now it's use in over 300 zoos, over 80 government agencies in 20 countries, for tracking pets (everything from lizards to dogs),for electronic "branding" of horses, monitoring lab animals, for tracking wild animals, automobiles, garment tracking, and humans tracking .

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The biochip implant system is actually a fairly simple device. In today's world biochip implant is a small (micro) computer chip which is inserted under the skin for the purpose of identification. The biochip system is actually radio frequency identification (RFID) system which is using low- frequency radio signals for communication between the biochip and reader.Biochips are "silently" inserted into humans. Registration Act of 1993 requiring all artificial body implants to have "implanted" identification the biochip. So, the yearly 6 million recipients of prosthetic devices and breast implants are "biochipped". To date over 7 million animals have been"chipped".

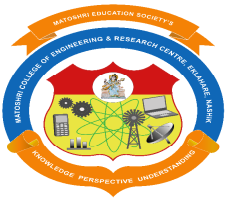THE BIOCHIP IMPLANT SYSTEM CONSISTS OF TWO MAIN COMPONENTS
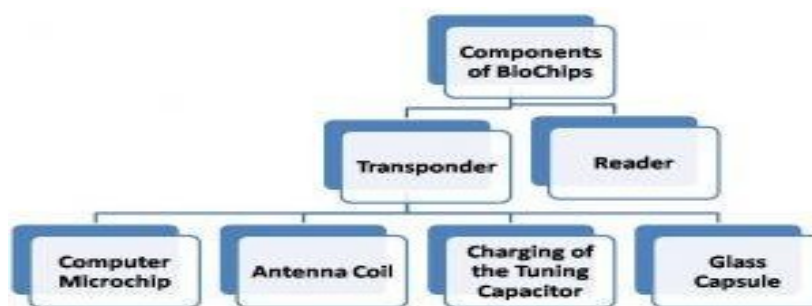
A.THE TRANSPONDER:

The transponder is the actual biochip implant. It is a passive transponder means it contains no battery or energy of its own. In comparison an active transponder would provide its own energy source normally a small battery. Because the passive biochip contains no battery or nothing to wear out it has a very long life up to 99 years and no maintenance. Being passive it's inactive until the reader activates it by sending it a low-power electrical charge.

The biochip transponder consists of four parts:

1. Computer Microchip:

 The microchip stores a unique identification number from 10 to 15 digits long. The storage capacity of the current microchips is limited capable of storing only a single ID number. AVID (American Veterinary Identification Devices) claims their chips using an nnn-nnn-nnn format have the capability of over 70 trillion unique numbers. The unique ID number is

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"etched" or encoded via a laser onto the surface of the microchip before assembly. Once the number is encoded it is impossible to alter. The microchip also contains the electronic circuitry necessary to transmit the ID number to the "reader".

2. Antenna Coil:

This is normally a simple coil of copper wire around a ferrite or iron core. This tiny primitive radio antenna "receives and sends" signals from the reader or scanner.

3. Tuning Capacitor:

The capacitor stores the small electrical charge (less than 1/1000 of a watt) sent by the reader or scanner which activates the transponder. This "activation" allows the transponder to send back the ID number encoded in the computer chip. Because "radio waves" are utilized to communicate between the transponder and reader the capacitor is "tuned" to the same frequency as the reader.

4. Glass Capsule:

The glass capsule consists of the microchip, antenna coil and capacitor. It is a small capsule the smallest measuring 11 mm in length and 2 mm in diameter about the size of an uncooked grain of rice. The capsule is made of biocompatible material such as soda lime glass. After assembly the capsule is hermetically (air-tight) sealed so, the fluids of body can not touch the micro components inside the chip. Because the glass is very smooth and susceptible to movement a material such as a polypropylene polymer sheath is attached to one end of the capsule.

B. THE READER:

The reader consists of an "exciter" coil which creates an electromagnetic field that via radio signals provides the necessary energy (less than 1/1000 of a watt) to "excite" or "activate" the implanted biochip. The reader also carries a receiving coil that receives the transmitted code or ID number sent back from the "activated" implanted biochip. This all takes place very fast in milliseconds.

The reader also contains the software and components to decode the received code and display the result in an LCD display. The reader can include a RS-232 port to attach a computer.

WORKING OF A BIOCHIP:

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The reader generates a low-power electromagnetic field in this case via radio signals which "activate" the implanted biochip. This "activation" enables the biochip to send the ID code back to the reader via radio signals. The reader amplifies the received code converts it to

digital format decodes and displays the ID number on the reader's LCD display. The reader must normally in between 2 and 12 inches near the biochip to communicate. The reader and biochip can communicate through various materials except metal.

THE APPLICATIONS:

With a biochip tracing of a person/animal , anywhere in the world is possible:

Once the reader is connected to the internet satellite and a centralized database is maintained about the biochipped creatures, It is always possible to trace out the personality intended. A biochip can store and update financial, medical, demographic data, basically everything about a person: An implanted biochip can be scanned to pay for groceries, obtain medical procedures, and conduct financial transactions. Currently in use implanted biochips only store10 to15 digits. If biochips are designed to accommodate with more ROM & RAM there is definitely an opportunity. Biochips really are strong in replacing passports, cash and medical records: The really powered biochip systems can replace cash, passports, medical & other records! It's no more required to carry wallet full cash, credit/ATM cards, passports & medical records to the market place. Payment system, authentication procedures may all be

References:

1.https://www.academia.edu/32281725/Study_on_Biochips_Technology
2.https://www.ijltemas.in/DigitalLibrary/Vol.3Issue7/168-172.pdf
3.https://www.scirp.org/pdf/16-1.4.pdf

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Nanoelectronics	Ayush Gunjal

Nanoelectronics is the term used in the field of nanotechnology for electronic components and research on improvements of electronics such as display, size, and power consumption of the device for the practical use. This includes research on memory chips and surface physical modifications on the electronic devices. Nan electronics cover quantum mechanical properties of the hybrid material, semiconductor, single dimensional nanotubes, nanowires, and so forth. Well-developed nanoelectronics can be applied in different fields, and are especially useful for detecting disease-causing agents and disease biomarkers. As a consequence, point-of-care detection became popularized due to the involvement of nanoelectronics. In this chapter, we discuss documented biosensing applications of nanoelectronics.
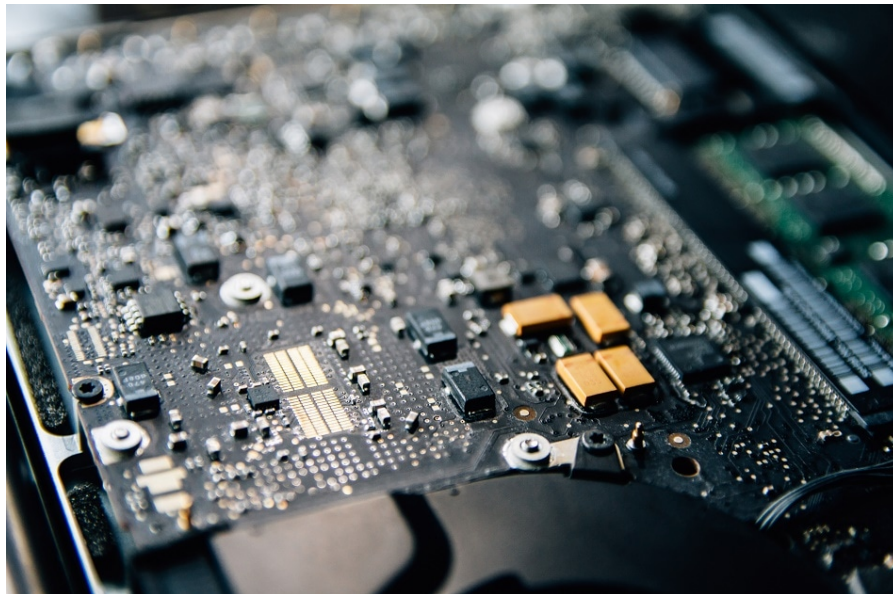
Nanoelectronics covers a diverse set of devices and materials, with the common characteristic that they are so small that physical effects alter the materials'properties on a nanoscale – inter-atomic interactions and quantum mechanical properties play a significant role in the workings of these devices. At the nanoscale, new phenomena take precedence over those that hold sway in the macro-world. Quantum effects such as tunneling and atomistic disorder dominate the characteristics of these nanoscale devicesThe first transistors built in 1947 were over 1 centimeter in size; the smallest working transistor today is 7 nanometers long – over 1.4 million times smaller (1 cm equals 10 million nanometers). The result of these efforts are billion-transistor processors where, once industry embraces 7nm manufacturing techniques, 20 billion transistor-based circuits are integrated into

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Fundamental concepts :

In 1965, Gordon Moore observed that silicon transistors were undergoing a continual process of scaling downward, an observation which was later codified as Moore's law. Since his observation, transistor minimum feature sizes have decreased from 10 micrometers to the 10 nm range as of 2019. Note that the technology node doesn't directly represent the minimum feature size. The field of nanoelectronics aims to enable the continued realization of this law by using new methods and materials to build electronic devices with feature sizes on the nanoscale.
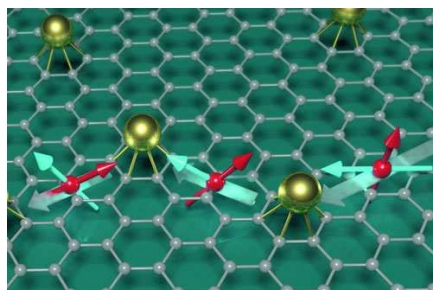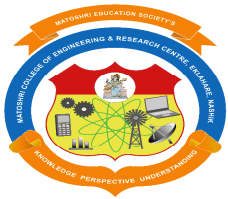
Nanoelectronics devices:

Spintronics:

Besides transistors, nanoelectronic devices play a role in data storage (memory). Here, spintronics – the study and exploitation in solid-state devices of electron spin and its associated magnetic moment, along with electric charge – is already an established technology. Spintronics also plays a role in new technologies that exploit quantum behavior for computing .

Applications:

Read heads of magnetic hard drives are based on the GMR or TMR effect.Motorola developed a first-generation 256 kb magnetoresistive random-access memory (MRAM) based on a single magnetic tunnel junction and a single transistor that has a read/write cycle of under 50 nanoseconds. Everspin has since developed a 4 Mb version. Two second-generation MRAM techniques are in development: thermal-assisted switching (TAS) and spin-transfer torque (STT). Another design, racetrack memory, encodes information in the direction of magnetization between domain walls of a ferromagnetic wire.In 2012, persistent spin helices of synchronized electrons were made to persist for more than a nanosecond, a 30-fold increase over earlier efforts, and longer than the duration of a modern processor clock cycle.

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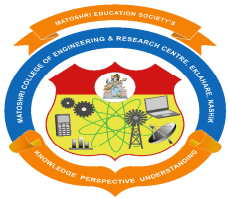
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Optoelectronics

Electronic devices that source, detect and control light – i.e. optoelectronic devices – come in many shapes and forms. Highly energy-efficient (less heat generation and power consumption) optical communications are increasingly important because they have the potential to solve one of the biggest problems of our information age: energy consumption.In the field of nanotechnology, materials like nanofibers (see for instance: "Light-emitting nanofibers shine the way for optoelectronic textiles") and carbon nanotubes have been used and especially graphene has shown exciting potential for optoelectronic devices.

Displays : Display technologies can be grouped into three broad technology areas; Organic LEDs, electronic paper and other devices intended to show still images, and Field Emission Displays. For more, read our special section on Nanotechnology in Displays.

Memory storage

Electronic memory designs in the past have largely relied on the formation of transistors. However, research into crossbar switch based electronics have offered an alternative using reconfigurable interconnections between vertical and horizontal wiring arrays to create ultra high density memories. Two leaders in this area are Nantero which has developed a carbon nanotube based crossbar memory called Nano-RAM and Hewlett-Packard which has proposed the use of memristor material as a future replacement of Flash memory.

An example of such novel devices is based on spintronics. The dependence of the resistance of a material (due to the spin of the electrons) on an external field is called magnetoresistance. This effect can be significantly amplified (GMR - Giant Magneto-Resistance) for nanosized objects, for example when two ferromagnetic layers are separated by a nonmagnetic layer, which is several nanometers thick (e.g. Co-Cu-Co). The GMR effect has led to a strong increase in the data storage density of hard disks and made the gigabyte range possible. The so-called tunneling magnetoresistance (TMR) is very similar to GMR and based on the spin dependent tunneling of electrons through adjacent ferromagnetic layers. Both GMR and TMR effects can be used to create a non-volatile main memory for computers, such as the so-called magnetic random access memory or MRAM. Commercial production of nanoelectronic memory began in the 2010s. In 2013, SK Hynix began mass-production of 16 nm NAND flash memory, and Samsung Electronics began production of 10 nm multi-level cell (MLC) NAND flash memory.[21] In 2017, TSMC began production of SRAM memory using a 7 nm process.

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Energy production

Research is ongoing to use nanowires and other nanostructured materials with the hope to create cheaper and more efficient solar cells than are possible with conventional planar silicon solar cells. It is believed that the invention of more efficient solar energy would have a great effect on satisfying global energy needs.There is also research into energy production for devices that would operate in vivo, called bio-nano generators. A bio-nano generator is a nanoscale electrochemical device, like a fuel cell or galvanic cell, but drawing power from blood glucose in a living body, much the same as how the body generates energy from food. To achieve the effect, an enzyme is used that is capable of stripping glucose of its electrons, freeing them for use in electrical devices. The average person's body could, theoretically, generate 100 watts of electricity (about 2000 food calories per day) using a bio-nano generator.[31] However, this estimate is only true if all food was converted to electricity, and the human body needs some energy consistently, so possible power generated is likely much lower. The electricity generated by such a device could power devices embedded in the body (such as pacemakers), or sugar-fed nanorobots. Much of the research done on bio-nano generators is still experimental, with Panasonic's Nanotechnology Research Laboratory among those at the forefront.

Molecular electronics

Distinct from nanoelectronics, where devices are scaled down to nanoscale levels, molecular electronics deals with electronic processes that occur in molecular structures such as those found in nature, from photosynthesis to signal transduction.Molecular electronics aims at the fundamental understanding of charge transport through molecules and is motivated by the vision of molecular circuits to enable miniscule, powerful and energy efficient computers .

The major conclusion of any review of nanoelectronics must be that the silicon transistor through CMOS is the dominant technology and will remain so for the foreseeable future. Only a break in the relentless pursuit of Moore's law in silicon may provide a chance for other technologies to try to compete. Such a break is more likely to be the result of economics rather than technological problems.A second significant conclusion of any nanoelectronics review will always be that the architectures for nanoelectronics are all the same ones used for CMOS, and new architectures are required for most new nanoelectronic concepts and devices if they are to succeed. Quantum computing is a very new architecture but it only provides niche applications and is not applicable to most nanoelectronic systems. It is also a field with much theory but little experimental demonstration to date. Much of the technology for quantum computing is way beyond present fabrication technology but this may change as the nanoelectronics research field progresses.

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The realization of a successful fault-tolerant architecture would bring enormous benefits to all nanoelectronic fields including CMOS and molecular electronics. The research field is therefore ripe for major advances in the future. Nanoelectronics is a fast-developing field that includes generating nanosensors in nano-sized dimensions for applications "from home to field." Nanoelectronic-based nanodevices are very important to developing the high-performance analyses. Researchers are working toward portable sensor generation for "bed-side analyses" and "point-of-care." A portable sensor is considered as good if it is easy to use, and offers real-time display and accuracy.

References:

1) https://iopscience.iop.org/journal/0957-4484
2) https://www.nanowerk.com/nanotechnology/introduction/introduction_to_nanotechnology_1.php
3) https://www.cdc.gov/niosh/topics/nanotech/default.html
4) https://www.nature.com/nnano

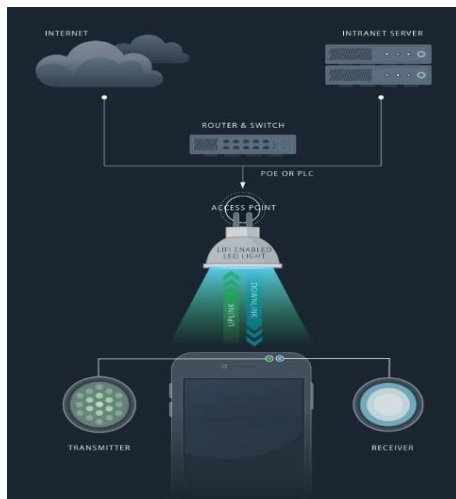| Li-Fi Technology	Gunvat Sonar

What is Li-Fi Technology?

Li-Fi is a wireless communication technology which uses light to transmit data between devices. Li-Fi is a light communication system which is used for transmitting data at high speeds using visible light, ultraviolet, and infrared spectrums. In its present state, only LED lamps can be used for the transmission of data in visible light. Li-Fi Technology is similar to wi-fi,, the main difference is wi-fi uses radio frequencies to transmit data and Li-Fi uses light to transmit data.
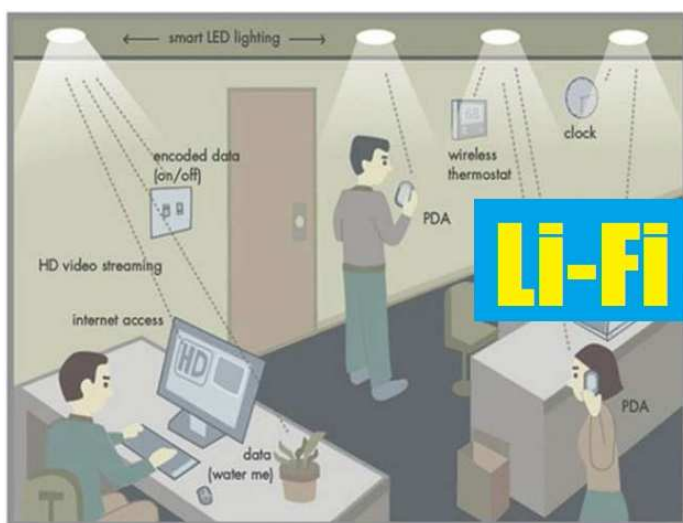
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How it works?

Li-Fi Technology is a branch of Optical wireless communication Technology, which uses Light emitting diodes(LED's) as medium to provide network, mobile, high speed communication similar to Wi-Fi. The technology makes a LED light bulb emit pulses of light that are undetectable to the human eye and within those emitted pulses, data can travel to and from receivers. Then, the receivers collect information and interpret the transmitted data. This is conceptually similar to decoding Morse code but at a much faster rate – millions of times a second. LiFi transmission speeds can go over 100 Gbps, 14 times faster than WiGig, also known as the world's fastest WiFi.

History:-

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Professor Harald Haas, Professor of Mobile Communications at the University of Edinburgh, coined the term "Li-Fi" at his 2011 TED Global Talk where he introduced the idea of "wireless data from every light". He believed light bulbs could act as wireless routers for Data transmission. His demonstration showed how changes in the amplitude of a light bulb at high speeds can be used for energy transmission. He demonstrated the use of LED for the transmission of a high definition video and then showed the same video to the audience. He also formed a company later on by the name of pureLiFi.

Standards:-

Like Wi-Fi, Li-Fi is wireless and uses similar 802.11 protocols, but it also uses ultraviolet, infrared and visible light communication. One part of VLC is modeled after communication protocols established by the IEEE 802 workgroup. However, the IEEE 802.15.7 standard is out-of-date: it fails to consider the latest technological developments in the field of optical wireless communications, specifically with the introduction of optical orthogonal frequency-division multiplexing (O-OFDM) modulation methods which have been optimized for data rates, multiple-access, and energy efficiency. The introduction of O-OFDM means that a new drive for standardization of optical wireless communications is required.

Application:-

- Home Automation
- Underwater Applications
- Aviation
- Hospital
- Vehicles
- Industrial Automation
- Advertising
- Warehousing

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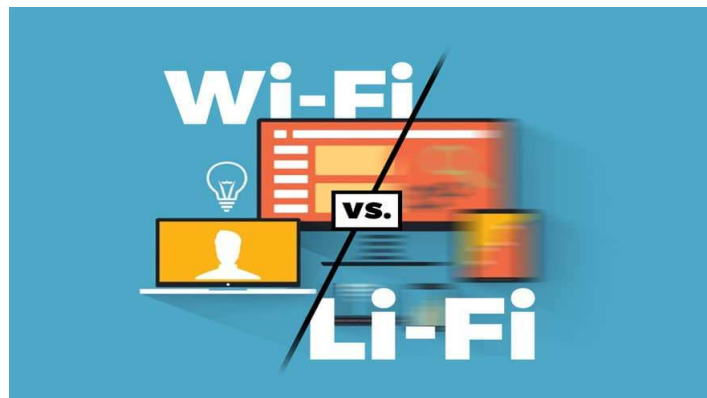
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Advantages:-

- It is more safer than wi-fi.
- It can also be used in electromagnetic sensitive areas.
- No limitation on spectrum capacity.
- Much faster than wi-fi.
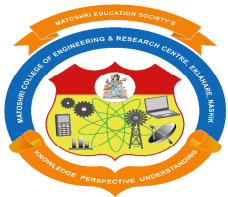- Expected to be cheaper than wi-fi.

Disadvantages:-

- Other sources of light can interfere with signal.
- Unable to penetrate walls.
- Short wave range,
- Transmitter needs to be installed in every room.

Li-Fi vs Wi-Fi:-

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Li-Fi	Wi-Fi
Cannot Penetrate Through Walls.	Can Penetrate Through Walls.
Has range of 10 meters.	Has range of 30 meters.
Less interference from other devices.	Has interference issues from other devices.
10000 times more frequency range than wi-fi.	Short frequency range than Li-fi.
Consumes less power to operate.	Consumes more power to operate.

References:-

1. https://en.wikipedia.org/wiki/Li-Fi
2. http://www.warse.org/pdfs/2014/icetetssp25.pdf
3. http://www.onlinejournal.in/IJIRV2I6/006.pdf
4. http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=668575
5. www.oledcomm.com
6. https://www.ijsr.net/archive/v5i9/26051603.pdf

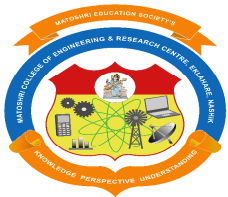| *What is Computer Engineering? Future Scope, Salary*	*Swati Bhavsar*

What is Computer Engineering: Computer Engineering combines several disciplines of computer science and electronics to develop computer hardware and software. A computer engineer designs and develops computer systems and other technological devices. The Computer Engineering course teaches how to prototype and test microchips, circuits, processors, conductors and other components used in computer devices or systems. It also teaches how to develop firmware, an essential type of software that allows operating systems and applications to take full advantage of the hardware.

A computer hardware engineer researches, designs, develops and tests computer systems and components such as processors, circuit boards, memory devices, networks and routers. Software engineering teaches how to build everything from small circuits to large systems. This branch of engineering trains students to design, construct, and repair any digital system. Candidates can go through this article for more detailed information about Computer Engineering.

What is Computer Engineering?

Computer Science Engineering is an integrated field of engineering that combines aspects of Electronic Engineering with Computer Sciences. It is mainly bifurcated into two parts – Hardware Engineering and Software Engineering. As the name reflects, Hardware Engineering

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is all about constructing a small microchip for large scientific computers. Software Engineering covers designing and constructing software for various purposes.

It is not easy to define Computer Engineering in a statement due to the extensive nature of this field. Computer engineers undertake various responsibilities depending on the industry and their place of employment, ranging from the manufacturing of microprocessors to creating and designing computer programs and algorithms.

Skills Required for Software Engineer

Computer engineering is a dynamic field, and candidates must possess a certain set of skills to be successful in this field. Given below are some of the skills that a software engineer should possess:

- Analytical and Diagnostic Skills
- Knack for Solving Problems
- Creative Outlook
- Programming and Algorithmic Skills
- Basic Knowledge of Web Development and Technical Writing
- Basic Knowledge of Machine Learning
- Ability to Think Critically
- Attention to Details

Common Specializations of Computer Engineering in India

Software Engineering and Data Science and Analytics

1. Machine Learning
2. Artificial Intelligence
3. Networking
4. Cyber Security
5. Mobile and Web Computing
6. Human-Computer Interaction
7. Bioinformatics
8. Robotics
9. Cloud Computing
10. Theoretical Computer Science
11. Information Systems and Management
12. Information Security
13. Forensic Security

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Bioinformatics	*Punam Dholi*

Bioinformatics, as a new emerging discipline, combines mathematics, information science, and biology and helps answer biological questions. The word 'bioinformatics' was first used in 1968 and its definition was first given in 1978. Bioinformatics has also been referred to as 'computational biology'. However, strictly speaking, computational biology deals mainly with modeling of biological systems. The main components of bioinformatics are (1) the development of software tools and algorithms and (2) the analysis and interpretation of biological data by using a variety of software tools and particular algorithms.

bioinformatics is the science of storing, retrieving and analysing large amounts of biological information. It is a highly interdisciplinary field involving many different types of specialists, including biologists, molecular life scientists, computer scientists and mathematicians.

The term bioinformatics was coined by Paulien Hogeweg and Ben Hesper to describe "the study of informatic processes in biotic systems" and it found early use when the first biological sequence data began to be shared. Whilst the initial analysis methods are still fundamental to many large-scale experiments in the molecular life sciences, nowadays bioinformatics is considered to be a much broader discipline, encompassing modelling and image analysis in addition to the classical methods used for comparison of linear sequences or three-dimensional structures
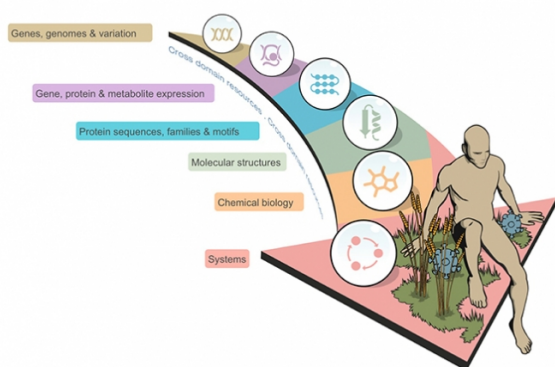
Bioinformatics is distinct from medical informatics – the interdisciplinary study of the design, development, adoption and application of IT-based innovations in healthcare services delivery, management and planning. Somewhere in between the two disciplines lies biomedical informatics – the interdisciplinary field *that studies and pursues the effective uses of biomedical* data, information, and knowledge for scientific enquiry, problem solving and decision making, motivated by efforts to improve human health.

Recently initiated projects, such as the 100,000 Genomes Project, are bridging the gaps between these disciplines, but on the whole bioinformatics deals with research data and uses it for research purposes, medical informatics deals with data from individual patients for the purposes of clinical management, (diagnosis, treatment, prevention…) and biomedical informatics attempts to bridge these two extremes

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Time For A Software Update On Your Car, Not Your Phone **Alpana Borse**

The increasing shift to a software-defined automotive industry isn't completely unchartered territory. There are parallels to be drawn between the evolution and growth of automobiles and smartphones

Automobiles are no longer mechanical devices. Instead, they are 'computers-on-wheels' running millions of lines of codes, evolving into software-driven transportation platforms. Original Equipment Manufacturers (OEMs) are leveraging in-vehicle software and technologies such as Advanced Driver Assistant Systems (ADAS), connected services, and infotainment systems to improve driver's safety and the overall driving experience.

According to Allied Market Research, the global automotive software market was worth USD 18.5 billion in 2019 and is expected to grow to USD 43.5 billion by 2027. The potential of 5G and artificial intelligence (AI), as well as innovations in semi-autonomous and autonomous vehicles, and data monetization in the extended automotive ecosystem, will unlock new use cases and transform urban mobility.

The rise of software-defined vehicles

Traditionally, automotive OEMs strive to provide the best mechanical features such as horsepower and torque in vehicles. With the rise of software-defined automobiles, this dynamic is changing.

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Consumers today are increasingly interested in features that are defined by software, such as autonomous driving features and a modern in-vehicle infotainment (IVI) system that connects with smart devices or sensors. This demand opens up a slew of touchpoints in the form of periodic software upgrades to correct bugs, enhance vehicle performance, address vulnerabilities that could compromise security, and allow hackers to gain access or control to a vehicle software, or to add new services.

Rather than focusing on hardware, OEMs are increasingly looking at new business lines or revising bill-of-materials efficacies specified by software functionalities for future models. With connected vehicles bringing in more data than ever, manufacturers can now analyse those data to discover manufacturing flaws, address reliability concerns that may be re-engineered and rectified in future models to improve their offerings to consumers.
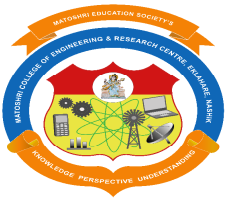
For example, VinFast, a leading Vietnamese premium automobile manufacturer recently announced that its first three electric vehicle models will feature location-embedded software development kits (SDKs) in conjunction with its mobile app to give a smart in-vehicle navigation experience. Drivers will be advised about charging stops on existing routes as well as unforeseen re-routes using multi-stop route planning.

Throughout the VinFast's vehicle's lifecycle, the firm will employ the navigation-as-a-service strategy to simplify the infotainment supply chain and development process while adding new services to its navigation capabilities. This will not only save the company money but also enable it to scale rapidly, offering a one-of-a-kind IVI system that sets it apart from its competition.

Connectivity influences the driving experience

As we transit from combustion vehicles to electric mobility, we will see customers prioritizing in-vehicle experiences, driven by fingerprint sensors, touch controlled navigation system, equipped with voice controls and AI.

Just like how we receive regular software updates on our smartphones, drivers will now receive in-vehicle notifications to prompt them to upgrade their vehicle software so they unlock updated features. With the aim to enhance driver's safety, such software updates will enable drivers to receive alerts that the ADAS has a new capability to aid expressway driving or that their car's range has been increased based on analysis of thousands of hours of battery cycles.

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Real-time data can also be used to monitor vehicle performance, generate real-time traffic and road hazard alerts, instantaneously call for emergency assistance, and even anticipate mechanical problems before they occur.

Aside from safety, software-led technology is also redefining in-car leisure & entertainment. As 5G goes mainstream and the Metaverse dawns, the car will be a moving entertainment pod, beaming high-definition games, surround-sound movies, and new forms of multiplayer interactive elements tied to virtual reality technologies. Eventually, driving will become a safe and fun experience.

Future-proofing the business of mobility

The increasing shift to a software-defined automotive industry isn't completely unchartered territory. There are parallels to be drawn between the evolution and growth of automobiles and smartphones. In the early 2000s, the battle of phones was dominated by hardware features. Each OEM competed over who had the flashiest feature. However, by separating hardware and software, smartphones altered this dynamic. Smartphone OEMs could now construct different operating systems and deliver upgrades over the air (OTA), while developers create new apps, focusing on software and services.

The automotive sector appears to be following suit, heading towards an all-connected future. This has a direct impact on companies who are partnering with automakers. Historically, automakers and parts suppliers have a vertical relationship, but this is weakening. Instead, car manufacturers are strengthening horizontal collaboration with technology and software companies. As a result, the automobile industry's growth will no longer rely on the quantity of vehicles they sell, but on connectivity-driven growth supported through strategic alliances.

Mobility is undergoing one of the most significant transformative, economic, social, and technological revolutions in a generation. It is being moulded by disruptive factors such as electrification, connectivity, and on-demand in-vehicle experiences. Those that can fully appreciate the impact and timing of disruption, as well as seize the correct emergent possibilities, will triumph.

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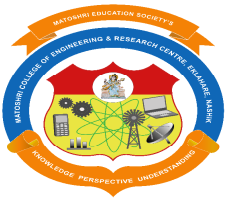
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The Death of the Personal Computer   *Niranjan Bhale*

The age of PC computers is over. That's certainly not to say no one will ever buy a PC again, but with the emergence and rapid success of smartphones and tablets, the volume of PC purchases has been declining steadily. With more ways to search the web than ever being developed, it seems unlikely that a huge comeback for the PC is right around the corner.

The proof that PCs are losing ground is in the numbers. According to a Forbes article entitled 2013 Represented Worst Decline In PC Market's History (a promising title to my point), sales of PC computers have fallen for **seven straight quarters**. In addition, according to a study by Gartner in the same article, 2013 marked a 10% decline in PC sales, which represents "the worst (decline) in history for the worldwide personal computer market." Eric Schmidt, Executive Chairman at Google, says in an article on Marketing Land that "mobile has won." He goes on to express his estimation that smartphone penetration will reach 75% of the US market by the end of 2014. While there could be some room for PC sales to grow internationally in developing countries, it seems that the first world market has been tapped as consumers continue to latch on to new technologies to satisfy their web searching needs.

While tablets and smartphones have already begun to take their toll on PC sales, there is evidence to suggest that the web searching market space could really explode in the coming years. I wrote an article last month that goes into detail about the potential of some of these emerging technologies, but at a glance consumers are already using Google Glass and the Samsung smart watch. While they aren't currently widespread, they are early innovations in an emerging market of wearable web search technology. In fact, according to a study from Market and Markets it is estimated that by 2018, the wearable tech market will be worth $8.36 billion. At least PCs had a good run – these new technologies have the potential to cut into smartphone and tablet sales before they escape adolescence. Whether these technologies will be developed and widespread in the next 5 years or the next 25 years is unclear. What is clear is that sooner or later they are coming, and pose a serious threat to the already hurting PC market.

So the question becomes: what does the death of personal computers mean for marketers? I certainly am not saying to abandon marketing efforts targeted to PC users, as it is still extremely important for any online marketer to effectively reach people via their PC. However, it makes it that much more important to focus on marketing efforts to mobile and tablet users. From an SEO perspective, having a unique mobile site or using responsive design so your site will adjust to a user's device is extremely important.

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This will help ensure your customers can efficiently view your site's content without getting frustrated. Keeping in mind how someone with a smaller screen may view your site is very important, and will only get more important as the mobile and tablet markets continue to grow nationally and abroad. For PPC, ads can be specifically created to reach only a mobile audience. In addition, percentage bid adjustments can be made to spend more or less on mobile audiences. Experimenting with these options to find the best mix of spend by device is important, and will only get more important as people start using new and different devices.

One line from the aforementioned Marketing Land article summed up the sentiment of this article perfectly: "What the rise of smartphones, tablets and, ultimately, wearables means is that an era of diversified internet access and computing has truly begun." With exciting new ways to search the web being developed rapidly, it is logical to assume that the way we search the web even a decade from now could be dramatically different than how we search today. PC's monopoly on web searches has come to an end. The death of the PC may be long and drawn out, but its best years are likely already behind it.
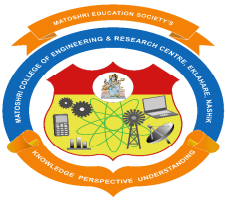
Ref https://www.marketing-mojo.com/blog/death-of-the-personal-computer/

Life without MOBILE   Yogesh Varhade

In one of my classes today we discussed the question of how our lives would be without a phone and I actually felt quite sad to hear how some kids these days cannot survive without their mobiles. Personally, I think nowadays we are controlled by our technology and pressurised to keep up. So let's see some of the points that came up in the debate and see if our generation really is addicted to electronic connections rather than true communication.

It is true that everything works at a fast pace these days, due to the quick access we have to pretty much anything and anyone. For example, you can contact someone who lives on the other side of the world within seconds. This is great if you think about how connected we can stay to the people who are far away from us; however, on the contrary, can we be too connected to the people who are close to us? An argument arose about the fact that it is easier to message someone from your sofa than to meet them in person and talk. On one hand, it is easier and nice sometimes to casually chat to a friend this way. However, it is also lazier and rude to prefer to talk to someone on your phone rather than meeting up, if you are able to, in my opinion. Social skills are important to have and if you are not going to put effort into real-life communication, then you are not going to progress in this ability.

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Another point was that phones are very handy to look up something that you are wondering about. For example, if you don't know a word in another language, you can quickly and simply access a translator to help you out. This can be very helpful in many situations, but it can also make a person dependent on the internet to help with anything. This factor slightly takes away the diversity of learning a language and conversing with people, as you are able to access everything you need via the web.

All in all, this question is very interesting to consider for oneself as we become day by day more dependent on technology. We should just be aware of how much we really need to be connected via our phones while considering the benefits and damage it can cause us.

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