Maratha Vidya Prasarak Samaj's
Rajarshi Shahu Maharaj Polytechnic, Nashik
Udoji Maratha Boarding Campus, Near Pumping Station, Gangapur Road, Nashik-13.
RSM POLY
Affiliated to MSBTE Mumbai, Approved by AICTE New Delhi, DTE Mumbai & Govt. of Maharashtra, Mumbai.

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RSM POLY NEWSLETTER – SEPT 2020

ABOUT MVP SAMAJ

The **Maratha Vidya Prasarak Samaj** is one of the most prestigious centers of learning in the State of Maharashtra. It manages 485 educational units and is one of the premier educational hub in the Nashik district.

At present, more than 2 lakhs of students are pursuing education. Over past 105 years, the institute has stood the test of time to become legend of unparalleled stature. History says that the credit for the birth of M.V.P. Samaj goes to the young, enthusiastic & devoted team of social workers and educationists who were inspired by the lives of Mahatma Jyotiba Phule, Savitribai Phule and Rajarshi Shahu Maharaj of Kolhapur. These young leading lights include Karmaveer Raosaheb Thorat, Bhausaheb Hire, Kakasaheb Wagh, Annasaheb Murkute, Ganpat Dada More, D. R. Bhonsale, Kirtiwanrao Nimbalkar and Vithoba Patil Khandalaskar, who laid the foundation of the Samaj. They were the men who envisioned the culture and knowledge centric society. The great visionaries of MVP Samaj rightly laid the "Wellbeing and happiness of masses" as the motto for the samaj.

ABOUT RSM POLYTECHNIC

The **Rajarshi Shahu Maharaj Polytechnic** has been established in the year 2008, at the central place in Nashik. It is affiliated to MSBTE, Mumbai and approved by Government of Maharashtra, DTE Mumbai and the AICTE, New Delhi. The Polytechnic is in the process of Accreditation and Gradation. The Polytechnic has well-equipped and well-furnished laboratories, workshop and hostel facilities. Every department has separate computational facilities along with LAN, Wi-Fi and necessary software. At present the RSM Polytechnic provides three-year courses leading to Diploma in Engineering of MSBTE, Mumbai in the five disciplines: Mechanical Engineering, Computer Technology, Electronics and Telecommunication Engineering, Information Technology and Electrical Engineering.

VISION AND MISSION

VISION:

- To Empower the Common Masses by providing Quality Technical Education.

MISSION:

- To create and implement innovative best practices to achieve academic excellence.
- To enhance the overall development of students by imparting essential skills.
- To inculcate principles of professional activities by promoting industry institute interaction and entrepreneurial skills.
- To create an environment awareness for sustainable development.

Admissions open for First Year and Direct Second Year Diploma Engineering

मराठा विद्या प्रसारक समाजाचे

राजर्षी शाहू महाराज पॉलिटेक्निक, नाशिक

उदोजी मराठा बोर्डींग कॅम्पस, गंगापूर रोड, नाशिक-१३
फोन नं.०२५३-२३११०१८, २३११०१९

प्रथम वर्ष व थेट द्वितीय वर्ष प्रवेश

शाखा	कोड	क्षमता
मेकॅनिकल इंजिनिअरींग	524761210	60
कॉम्प्युटर टेक्नोलॉजी	524725110	60
इलेक्ट्रॉनिक्स अॅन्ड टेलीकम्युनिकेशन इंजिनिअरींग	524737210	60
इन्फॉरमेशन टेक्नोलॉजी	524724610	60
इलेक्ट्रीकल इंजिनिअरींग	524729310	60

प्रवेशासाठी पात्रता

प्रथम वर्ष	थेट द्वितिय वर्ष
* इयत्ता १० वी पास	* इ. १२ वी सायन्स, एम.सी.व्ही.सी., व्होकेशनल, टेक्निकल * आय.टी.आय. (कमीत कमी दोन वर्षाचा कालावधी)

वैशिष्ट्ये : * उच्च शिक्षित व अनुभवी प्राध्यापक वर्ग * सर्व प्रकारच्या शासकिय स्कॉलरशिप योजना लागू * नाशिक शहराच्या मध्यवर्ती ठिकाणी * सुसज्ज प्रयोगशाळा व सुसज्ज ग्रंथालय * कॅम्पस इंटरव्ह्युद्वारा नोकरी मिळविण्याची संधी.

MVP RSM Polytechnic FC

- **MVPS's RSM Polytechnic has otherized Facilitation Center for First Year and Direct Second Year Diploma Engineering Admission**

FC takes all precautions to avoid spread of Covid-19 with social distancing guided by DTE.

MVP RSM Polytechnic

- **MVPS's RSM Polytechnic celebrated Teacher's Day (5th Sept 2020)**

The Birth Anniversary of Dr. Sarvepalli Radhakrishnan was celebrated as Teacher's Day in the institute by faculties and supporting staff members with social distancing.

- **MVPS's RSM Polytechnic conducted Demonstration on LMS (30th Sept 2020)**

MVPS's RSM Polytechnic conducted the demonstration program on Lecture Management System. It was deliverd by Mr. Yatin Mishra and Mr. Narendra Bhole.

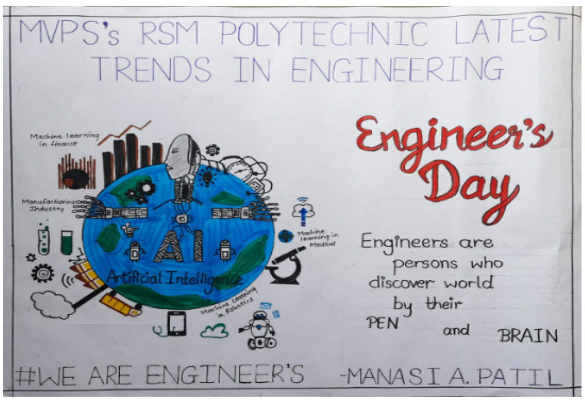
Mechanical Engg. Department

- **Engineer's Day (15th Sept 2020)**

The Birth Anniversary of Sir M. Visvesvaraya was celebrated as Engineer's Day by Mechanical Engg. Dept. Mr. Amod Dikshit and Mr. Subodh Murkewar (President, ISHRAE, Nashik) was chief guest for Program. Mr. Krishna Dhan Das sir was delivered webinar on 'An Elegant Engineer'.

Computer Engg. Department

- **Engineer's Day (15th Sept 2020)**



The Birth Anniversary of Sir M. Visvesvaraya was celebrated as Engineer's Day by Computer Dept. through online mode. On this occasion Quiz and Poster Making competition were organized by Dept.

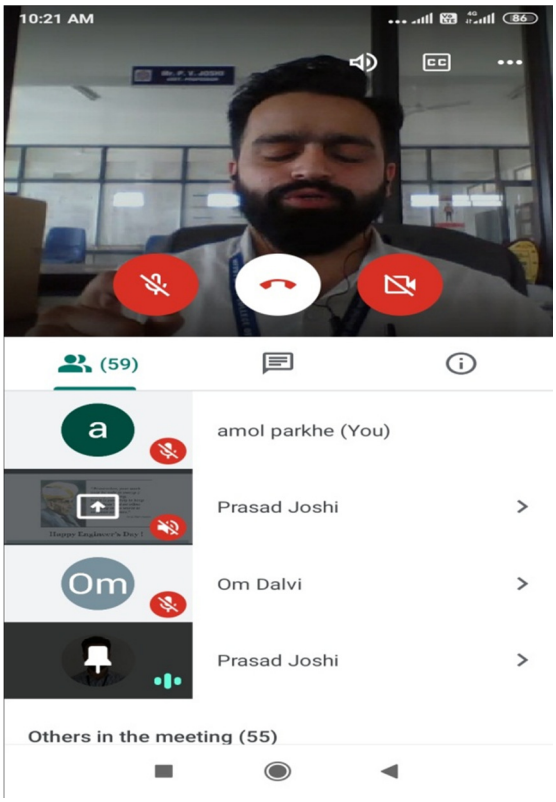
Information Techology Department

- Engineer's Day (15th Sept 2020)

The Birth Anniversary of Sir M. Visvesvaraya was celebrated as Engineer's Day by Information Technology Dept. through online mode.

Electrical Engineering Department

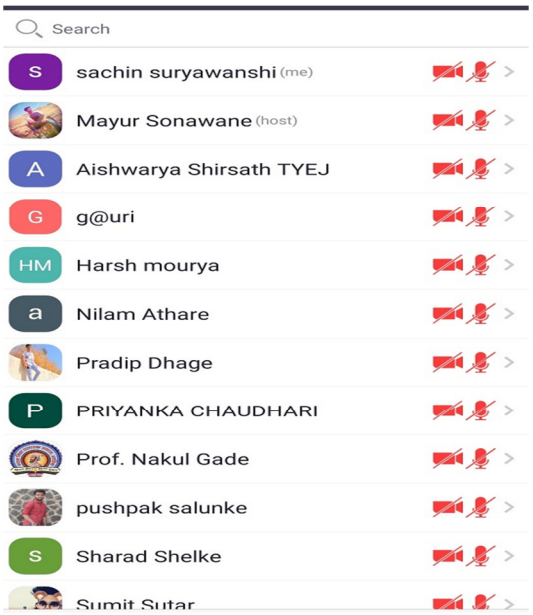
- Engineer's Day (15th Sept 2020)



The Birth Anniversary of Sir M. Visvesvaraya was celebrated as Engineer's Day by Electrical Engg. Dept. through online mode. Prof. P. V. Joshi sir delivered Lecture on New Trends in Electrical Engineeering. It was organised by Prof. A. S. Parkhe.

E & TC Engineering Department

- Teacher's Day (5th Sept 2020)



On the occasion of Teachers Day students of E & TC department was organized Teachers Day on 5th Sept 2020 through online mode.

- Engineer's Day (15th Sept 2020)

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Certificate ID: LLF7GE-CE000007

Certificate of Appreciation

This is to certify that Salunke pushpak sunil from MVPS RSM Polytechnic has participated and successfully completed the online quiz on "Engineers Day" organised by E & TC department of MVPS's Rajarshi Shahu Maharaj Polytechnic, Nashik on 15-9-2020.

Prof. S.A.Suryawanshi, Quiz Coordinator | Prof. S.N.Shelke, HOD | Dr. D.B.Uphade, Principal

The Birth Anniversary of Sir M. Visvesvaraya was celebrated as Engineer's Day by E & TC Dept. through online mode. On this Occasion Quiz competition was organized by Dept.

RSM In News:

आपलं महानगर

थोडक्यात

अभियंता दिन उत्साहात

नाशिक● मविप्र शिक्षण संस्थेच्या तंत्रनिकेतनमध्ये सोशल डिस्टंसिंग चे पालन करून सर मोक्षगुंडम विश्वसरैया यांच्या प्रतिमेचे पूजन करून ऑनलाईन पद्धतीने ॲन इलीगंट इंजिनीअर या विषयावर वेबीनार घेण्यात आला. एचएएलचे माजी अभियंता व इस्कॉन नाशिकचे प्रेसिडेंट कृष्णधनदास यांनी वरील विषयावर मार्गदर्शन केले.

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Trending Technology:

Cryptocurrency

A **cryptocurrency** (or **crypto currency**) is a digital asset designed to work as a medium of exchange wherein individual coin ownership records are stored in a ledger existing in a form of computerized database using strong cryptography to secure transaction records, to control the creation of additional coins, and to verify the transfer of coin ownership. It typically does not exist in physical form (like paper money) and is typically not issued by a central authority. Cryptocurrencies typically use decentralized control as opposed to centralized digital currency and central banking systems. When a cryptocurrency is minted or created prior to issuance or issued by a single issuer, it is generally considered centralized. When implemented with decentralized control, each cryptocurrency works through distributed ledger technology, typically a block chain, that serves as a public financial transaction database.

Cryptocurrency Examples and Applications

- Bitcoin
- Litecoin
- Ripple
- Ethereum
- Dogecoin
- Coinye

One of the most well-known uses of cryptocurrency is for sending and receiving payments at low cost and high speed. For example, a recent $99 million litecoin (LTC) transaction took only two and a half minutes to process and cost the sender only $0.40 in transaction fees. If this money transfer had gone through a financial intermediary the fees would have been much, much higher and the transfer would have taken several days, or longer if this was a cross-border transaction.

The low fees associated with transactions using digital currencies such as litecoin (LTC), stellar (XLM) or bitcoin cash (BCH) make them excellent payment systems for international money transfers.

What is the history of the Cryptocurrency?

In 1983, the American cryptographer David Chaum conceived an anonymous cryptographic electronic money called ecash. Later, in 1995, he implemented it through Digicash, an early form of cryptographic electronic payments which required user software in order to withdraw notes from a

bank and designate specific encrypted keys before it can be sent to a recipient. This allowed the digital currency to be untraceable by the issuing bank, the government, or any third party.

Ms. Bhumi S. Sonawane
Student-IF Dept.

Data science using R programming

R is a powerful language used widely for data analysis and statistical computing. It was developed in early 90s. Since then, endless efforts have been made to improve R's user interface. The journey of R language from a rudimentary text editor to interactive R Studio and more recently Jupyter Notebooks has engaged many data science communities across the world. This was possible only because of generous contributions by R users globally. Inclusion of powerful packages in R has made it more and more powerful with time. Packages such as dplyr, tidyr, readr, datatable, SparkR, ggplot2 have made data manipulation, visualization and computation much faster.

What is an application of an Data science using R programming?

Harvard Business Review named **data scientist the "sexiest job of the 21st century"**. Glassdoor named it the "best job of the year" for 2016. With the advent of IoT devices creating terabytes and terabytes of data that can be used to make better decisions, data science is a field that has no other way to go but up. Simply explained, a data scientist is a statistician with an extra asset: computer programming skills. Programming languages like R give a data scientist superpowers that allow them to collect data in realtime, perform statistical and predictive analysis, create visualizations and communicate actionable results to stakeholders.Most courses on data science include R in their curriculum because it is the data scientist's favourite tool.

What is the history of the Data science using R programming ?

R is an implementation of the S programming language combined with lexical scoping semantics, inspired by Scheme. S was created by John Chambers in 1976, while at Bell Labs. There are some important differences, but much of the code written for S runs unaltered.

R was created by Ross Ihaka and Robert Gentleman at the University of Auckland, New Zealand, and is developed by the *R* Development Core Team (of which, as of August 2018, Chambers was a member). R is named partly after the first names of the first two R authors and partly as a play on the name of S. The project was conceived in 1992, with an initial version released in 1995 and a stable beta version (v1.0) on 29 February 2000.

Mrs. R. V. Shinde
Technical Assistant- IF Dept.

Wireless mobile charger

Wireless charging eliminates the cable typically required to charge mobile phones, cordless appliances and so on. With a wireless charger, the battery inside any battery-powered appliance can be charged by simply placing the appliance close to a wireless power transmitter or a designated charging station.

How does it work?

Wireless charging works by transferring energy from the charger to a receiver in the back of the phone via electromagnetic induction. The charger uses an induction coil to create an alternating electromagnetic field, which the receiver coil in the phone converts back into electricity to be fed into the battery.

Need: You need two things. The first is a smartphone that supports wireless charging, or a case that you can put on one to add wireless charging if it doesn't come built in.

The second is a wireless charger. These little pucks or mats come in various shapes and sizes, from larger mouse mat-like things to small discs built into furniture, and are available from about £10.

Wireless charging working:

Broadly speaking, there are three types of wireless charging, according to David Green, a research manager with IHS Markit. There are charging pads that use tightly-coupled electromagnetic inductive or non-radiative charging; charging bowls or through-

surface type chargers that use loosely-coupled or radiative electromagnetic resonant charging that can transmit a charge a few centimeters; and uncoupled radio frequency (RF) wireless charging that allows a trickle charging capability at distances of many feet.

Both tightly coupled inductive and loosely-coupled resonant charging operate on the same principle of physics: a time-varying magnetic field induces a current in a closed loop of wire.

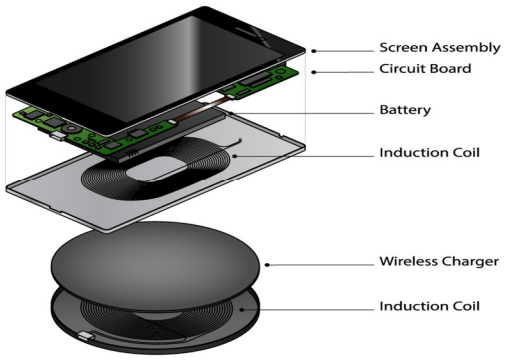


Fig.: Depicting How Wireless Charging Works.

Advantages of Wireless Charging:

Wireless charging can be sized to deliver 5W or 10W of energy to the battery. It can be a good solution to charge your battery. It can also charge you battery at a fast rate depending on the size of the battery pack.

Ms. Pooja Dhondge
SYEJ

Smart Card and Its Applications

Smart card is an equipment that comprise of an embedded integrated circuit chip also known as ICC. This ICC can either be a self-asserting micocontroller or matching intelligence with inbuilt memory or just a memory chip lone. A smart card gets connected to the reader only when its directly physically contacted or with the aid of a remote contactless radio-frequency interlace. With an embedded microcontroller, smart card have the idiomatic capability to accumulate huge amount of information or data. performing their individual on-card operations such as- mutual authentication, encryption and interact cleverly with the smart card reader. This smart card technology harmonize with the international market standards (ISO/IEC 14443 & ISO/IEC 7816) and is existing in a large number of forms such as- SIMs (subscriber identity modules) employed in GSM cell phones, plastic cards, USB based tokens, fobs, etc.

Smart Card Technology

There are basically two types of smart cards – contact smart card & contactless smart card.

1) Contact Smart Card:

2) Contactless Smart Card:

There are two sub categories of the smart card namely dual-interface cards & hybrid cards.

a)Hybrid Card:

b)Dual Interface Card

Smart Card Applications:

1) Credit card
2) Satellite TV
3) Computer security systems
4) Electronic cash
5) Wireless communication
6) Government identification

Advantages of Smart Cards:

- User comfort
- Specific standards ISO 7810, 7811, 9992, 10536.
- Ensuring economic operations, 100% effective theft-proof
- Administration and control over cash payments
- Ease of use without need for connections online or via telephone
- Falling costs for operators and users.
- Privacy
- Represent liquidity
- Organized information
- Upper management information

Mrs.C. K. Bhor
EJ Dept.

Robotic Exoskeleton

Robotic exoskeletons involve sensors, actuators, mechanical structures, algorithms, and control strategies capable of acquiring information to execute a motor function. A key feature of exoskeletons is the direct interaction between human and device. This aspect could be divided into cognitive human-robot interaction (cHRI) and physical human-robot interaction (pHRI). cHRI relates to how the user controls the exoskeleton. pHRI relates to the application of controlled forces between human and exoskeleton.

Interaction of exoskeleton with the user involves three main modules: sense, decision, and execution Developing robotic exoskeletons relates to including technologies to accomplish function of each module.
The sense module acquires the information data from the human operator as well as device sensors. The decision module interprets the sensing information and organizes the activities in the whole system. The execution module is responsible for the actuation, providing mechanical power.
Acquiring information from the human operator for cHRI could be implemented using bioelectric signals such as the electromyogram (EMG), which evaluates and records physiologic properties of muscles; electroencephalogram (EEG, which monitors brain waves), and electrooculogram (EOG, which monitors eye movements). On the other hand, pHRI involves acquiring kinematics and kinetic information. A critical aspect while designing exoskeletons relates to measuring of the interaction forces between the device and the user's limbs, which can be used to assess the performance of the user in executing a task (e.g., the level of effort spent by a patient in completing a therapy). A common way to measure interaction force/torque is to adapt a force sensor between the cuff and the exoskeleton link, which provide accurate measurements

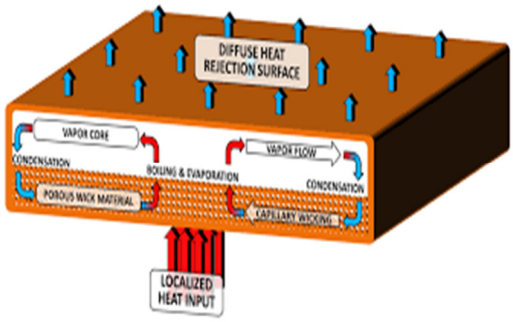
2.Benefits

Potential benefits of robotic exoskeletons include:

•Increasing user independence.

•Secondary benefits such as improved bowel/bladder function, decreased chronic pain, reduced spasticity and increased bone marrow density

•The reduction of energy required by the user to move joints, i.e., knee, hip and ankle, as this load is taken by the exoskeleton itself.



•Providing repetitive, long and intense physiotherapy sessions, yet reducing both therapist burden and healthcare costs

•Providing measurements of several kinematic and dynamic parameters of patient limb movement and therefore performance-related indicators (e.g., range of motion, velocity, smoothness) to objectively quantify patient progress The robotic rehabilitation systems for the lower limbs can be classified into:

•Fixed site/stationary and

•Mobile/overground walking systems.

At present the range of disabilities that this type of appliance benefits is limited and while used for rehabilitation, they are not yet at a stage where prosthetic limb exoskeletons are used throughout the day for typical daily ambulation.

Fixed/Stationary Systems

Fixed or stationary exoskeletons systems incorporate a fixed structure combined with a moving ground platform (such as a treadmill or footplates) and aim to automate traditional therapies They may be treadmill-based or programmable foot end-effector devices. Treadmill-based systems use a robotic orthotic/exoskeleton connected to the patient's lower limbs together with a body weight system to offload a part of the weight of the patient during the stance phase of the gait, reducing the load needed to be overcome by the patient, and ensuring safety and stability during walking. Foot end-effector systems use driven footplates for guiding the feet and simulating the phases of the gait.

Examples of fixed/ stationary systems include:

3. Lokomat :

It is a modular device consisting of a powered orthosis/exoskeleton, a suspension system to provide BWS and a treadmill The hip and knee joints are actuated by linear drives integrated into an exoskeletal structure. The system offers 2 DOFs in each leg, enabling hip and knee flexion and extension movements in the sagittal plane (Lunenburger et al., 2004). The patient is fixed to the orthosis with straps around the

waist, thighs and shanks and the system can be adjusted to the individual's anthropometry. During training, the Lokomat moves the patient's legs through a preprogrammed gait pattern. An augmented feedback module provides feedback to the patient while walking, by projecting the results of the exercises on a display panel to enhance their motivation.

Fig.1 Robotic exoskeletons

Mr. M. S. Gaidhani.
(Lecturer Mechanical Engineering Department)

Vapour Chamber

A vapour chamber is a planar heat pipe, which can spread heat in two dimensions. They are typically used when high powers and heat fluxes are applied to a relatively small evaporator area. During operation, the heat input into the evaporator vaporizes liquid within the evaporator wick. The vapour then flows throughout the chamber, creating an isothermal heat spreader. The vapour then condenses on the condenser surfaces, where the heat is removed by forced convection, natural convection, or liquid cooling. Capillary forces in the wick then return the condensate to the evaporator. Note that most vapour chambers are insensitive to gravity, and will still operate when inverted, with the evaporator above the condenser.

Setup of Vapour Chamber

The tested vapour chamber consists of three main parts top plate, bottom plate and space ring. The top and bottom plates are made from copper with thickness 1 mm. The space ring was made from copper, with inner, outer diameter 50 mm, 70 mm and 2 mm thickness respectively. The above three parts are collected together through eight circumferential bolts. A suitable sealant agent used to completely prevent leakage Two holes with 1 mm diameter radial drilled through spacing ring to allow two thermocouples fixation inside vapour chamber cavity on inner surface of evaporator and the second one fixed on inner surface of condenser. A charging valve with path to chamber cavity used to make charging process easy and simple see Fig. 1. A cooling path constructed from transparent acrylic cover with oil seal to prevent leakage, fixed on outer condenser surface of chamber using suitable glue. Inlet and outlet cooling water tubes fixed on this cover.

Comparison of Heat Pipe and Vapour chamber.

Although both are operate on same principles, their manufacturing process and design flexibility are different. In fact, you can think of vapour chambers as large planner heat pipes. Both the heat pipe and one piece vapour chamber start the manufacturing process as a copper tube offering cost and shaping benefits. Two piece vapour chamber begin life as two stamped plates. Vapour chamber are most often used to spares heat to a local heat sink. Vapour chambers have large continuous area, allowing for better isothermalization of the heat sink, If you need a heat sink that's minimally 10 times, but usually closer to 20 times, the area of that source

The Advantages include the following.

One of the primary advantages of a vapor chamber cooling system is that it occupies a smaller space than heat pipes. The flat structure of vapor chambers enables them to transfer heat effectively through a relatively small amount of space.

Take note that laptops and other mobile devices such as smartphones and tablets have limited and cramped space. Engineers need to integrate a cooling system within the hardware without sacrificing the compactness and mobility of these devices.

Mast. S. B. Shinde.
TYME

An investment in knowledge always paws the best:

My self Om Sunil Dalvi from 2nd year Electrical Department one year ago, I was confused that which college should I choose for my diploma course then everyone suggest mi Rajashri Shahu Maharaj Polytechnic.The vision of Rajarshi Shahu Maharaj Polytechnic is to be the leading Centre of learning and innovation in emerging areas of business and management education.

- **History of RSM POLYTECHNIC**:

Rajashri Shahu Maharaj Polytechnic was established in year 2008 by Maratha Vidya Prasarak Samaj (MVP).It has total 5 diploma course

1) Diploma in electronics and telecommunication
2) Diploma in Information technology
3)Diploma in computer technology
4) Diploma in electrical engineering
5) Diploma in mechanical engineering

A good progressive teachers staff is there. Teachers help students in every difficulties or problems. A best library is there in RSM Polytechnic campus. The modern teaching methodology assists the students in getting an all-around view of engineering, technology and the entrepreneur world. The infrastructure and facilities of Rajarshi Shahu Maharaj Polytechnic consists of spread-out campus alongside various amenities in the form of library, computer center, classrooms with proper teaching and learning aids, medical facilities etc. I think I am blessed that I get admission in RSM POLYTECHNIC.

For every course the college imparts practical training to its student's that helps them to understand better, improves their demonstrative skills, eliminate hesitate and in this process strives to mould them into ready professionals. Mission of Rajarshi Shahu Maharaj Polytechnic is to faster critical analysis by training students both in theory and practical so as to equip them with skills needed for facing global challenges with them work and human value. The diligent faculty team of college possesses hands-off experience and up to date knowledge of their subject and area of expertise. The institute seeks to place each of its student's in an organization/company of great repute. I think I am blessed that I get admission in this college

Mast. Dalvi Om Sunil
SYEE

विद्युत अभियांत्रिकी क्षेत्रासाठी सुवर्ण काळ

वीज निर्मिती क्षेत्रातील संधी –

भारत सरकारने औद्योगिक क्षेत्राची वाढ सुनिश्चित करण्यासाठी ऊर्जा क्षेत्राला एक प्रमुख क्षेत्र म्हणून घोषित केले आहे. केंद्रीय अर्थसंकल्प २०२० नुसार, ऊर्जा क्षेत्रासाठी सुमारे रु. २२,००० कोटींची तरतूद करण्यात आली आहे. इ. स. २०३० पर्यंत वाढणारी लोकसंख्या, वाढते विद्युतीकरण आणि विजेच्या दरडोई वापरातील वाढ लक्षात घेता ही गुंतवणूक वर्षानुवर्षे वाढतच जाणार आहे.

ग्लोबल वार्मिंग आणि विद्युत वाहन निर्मिती क्षेत्रातील संधी

भारत सरकारच्या संकरित आणि विद्युत वाहनांची निर्मिती व त्वरित अवलंब योजने नुसार, २०३० पर्यंत भारतात विजेवर चालणाऱ्या ३० % खाजगी वाहनांची, ७० % व्यावसायिक वाहनांची, ४० % बसगाड्यांची आणि ८० % दोन व तीन चाकी वाहनांची विक्री होईल. या योजने अंतर्गत संकरित व विद्युत वाहनांची रचना, बॅटरी (विजेरी) व्यवस्थापन प्रणाली, खनिज तेलावर चालणाऱ्या वाहनांची पुनर्रचना, ऊर्जा-कार्यक्षम यंत्रांची रचना, चार्जिंग स्थानके आणि संबंधित विद्युत पायाभूत सुविधा उभारणी, वाहन-ते-विद्युत ग्रीड आणि विद्युत ग्रीड-ते-वाहन संप्रेषण या सर्व क्षेत्रांना गती मिळणार आहे. या सगळ्यातून विद्युत अभियंत्यांना संशोधन आणि विकास, निर्मिती व रचना या क्षेत्रांमध्ये केवळ भारतातच नव्हे तर परदेशात सुद्धा खाजगी क्षेत्रात अमाप संधी उपलब्ध होतील.

सगळ्यात महत्वाचे म्हणजे यातून वैयक्तिक स्टार्ट-अप उभारण्यासाठी सुद्धा चालना मिळणार आहे. या स्मार्ट शहरांमध्ये पसरत जाणारं विद्युत मेट्रो व मोनोरेलच जाळं आणि रेल्वेच विस्तारीकरण यामधून सुद्धा पुढच्या ५ ते १० वर्षात मेगा भरती होण्याची शक्यता मुळीच नाकारता येत नाही.

स्मार्ट शहर निर्मितीतील संधी -

१०० स्मार्ट शहरांची घोषणा केल्यानंतर केंद्र सरकार देशातील नवीन ४000 शहरांची निवड करणार आहे. उपलब्ध संसाधनांचा, उदा. पाणी, ऊर्जा, यांचा उत्तम वापर करणे हे स्मार्ट सिटीचे मुख्य उद्दिष्ट्य आहे. ऊर्जेचा विचार करता, स्मार्ट शहरांमध्ये, स्मार्ट ऊर्जा मीटरचा वापर करून, मिनिटा-मिनिटाची माहिती जतन करता येईल व कार्यक्षम विजेचा वापर होईल. नेट मीटरिंगने वैयक्तिक ऊर्जा निर्मिती व त्याचे मुख्य विद्युत ग्रीड मध्ये सामायिकरण सोपे झाले आहे. यामुळे विजेचा वापर नियंत्रित करण्यास आणि विद्युत कंपन्यांवरील प्रचंड दबाव कमी करण्यास मदत होईल. स्मार्ट मीटरिंग, नेट-मीटरिंग, होम ऑटोमेशन, ग्रीन बिल्डिंग, वैयक्तिक उर्जा निर्मितीला प्रोत्साहन आणि त्याचे मुख्य ग्रीडशी संलग्नीकरण हे विद्युत अभियांत्रिकीमधील नवीन उद्योजकांना जन्म देणारे ठरणार आहे.

माहिती आणि तंत्रज्ञान क्षेत्रातील संधी

इंटरनेट ऑफ थिंग्स, डेटा सायन्स, मशीन लर्निंग, आर्टिफिशल इंटीलिजन्स यासारख्य आमूलाग्र बदल घडवणाऱ्या उपशाखांमुळे २०२२ पर्यंत जवळपास ३५०० कोटी नवी उपकरणे कार्यान्वित होणार आहेत. कार्यक्षम उर्जा हस्तांतरण, देखरेख आणि नियंत्रण यासाठी या तंत्रज्ञानाचे ऊर्जा अभियांत्रिकीशी एकत्रीकरण विद्युत अभियंत्यांसाठी नोकरीची नवीन दालने उघडेल. यासाठी आवश्यक असलेली कौशल्ये ही इंटरनेटच्या एका क्लिकवर उपलब्ध आहेत. विद्युत अभियांत्रिकीचा नियमित अभ्यास करतानाच जर काही ऑनलाईन अभ्यासक्रम पूर्ण केले तर ते सहज शक्य आहे. त्याचबरोबर जर आधुनिक प्रोग्रामिंग कौशल्य आत्मसात केले तर माहिती आणि तंत्रज्ञान क्षेत्रातल्या सॉफ्टवेअर अभियंता, सॉफ्टवेअर डेव्हलपर आणि प्रोग्रामर ही नोकरीची स्थानेसुद्धा निश्चित करता येतील, ज्यायोगे इन्फोसिस, कॉग्निझंट, टी. सि. एस. इत्यादी कंपन्यांमध्ये नोकरी मिळू शकेल.

उच्च शिक्षण, स्पर्धा परीक्षा आणि इतर संधी -

इ. स. २०५० पर्यंत, बहुतेक सर्व क्षेत्रांचे विद्युतीकरण पूर्ण होईल असा अंदाज आहे. हे करीत असतांनाच, विविध उपकरणांच्या कार्यक्षमतेसाठी चांगल्या उर्जा गुणवत्तेवर (गुड पॉवर क्वॅलिटीवर) भर दिला जाईल. परिणामी, विद्युत अभियंत्यांनी उर्जा गुणवत्ता सुधारण्यासाठी नवनवीन तंत्रज्ञानाचा वापर करणे अधिक महत्वाचे ठरेल. याठिकाणी विद्युत अभियंत्याना उर्जा व्यवस्थापक आणि प्रमाणित ऊर्जा ऑडिटर्स म्हणून काम करण्यास संधी राहील. उद्योग विद्युतीकरण तेवत ठेवण्यासाठी, विद्युत अभियंत्यांना वर नमूद केलेल्या सर्व परिस्थितींमध्ये सहज संक्रमण सुनिश्चित करण्यासाठी अत्यंत महत्वाची भूमिका बजावावी लागणार आहे. या आश्वासक संधींव्यतिरिक्त उच्च शिक्षणाच्या व प्रशासकीय सेवेत काम करण्याच्या संधी ह्या कायमच आकर्षणाच्या विषय राहिलेल्या आहेत. उच्च शिक्षणासाठी राष्ट्रीय व आंतरराष्ट्रीय प्रवेश परीक्षेतून एम. टेक., एम. एस., एम. बी. ए., पी. एच. डी. यासाठी भारतात आणि परदेशात प्रवेश घेता येतो. परदेशी शिक्षणासाठी भारत सरकारच्या खूप योजना आहेत. भारतीय प्रशासकीय, अभियांत्रिकी आणि सार्वजनिक क्षेत्रातील नोकऱ्यांसाठी आयएएस, आयईएस, एमपीएससी, यूपीएससी इत्यादी स्पर्धा परीक्षा द्याव्या लागतात. भारत सरकारच्या महत्वाकांक्षी योजनांचा विचार करता नजीकच्या काळात प्रशासकीय व अभियांत्रिकी सेवांमधली भरती वाढण्याची दाट शयक्यता आहे.

सगळ्यात शेवटी विद्युत अभियांत्रिकीची निवड का करावी याचे सर्वात महत्त्वाचे कारण म्हणजे तंत्रज्ञानाच्या वेगवान विस्तारामुळे आपण नवीन पदवीधर असला काय किंवा अनुभवी व्यावसायिक असला काय, विद्युत अभियंता म्हणून नोकरी मिळविणे किंवा संबंधित व्यवसाय करणे हे नेहमीच सोपे जाईल. विद्युत अभियांत्रिकी म्हणजेच इलेक्ट्रिकल इंजिनिरिंग ही आभियांत्रिकीतील मूलभूत (कोअर) शाखा असल्यामुळे या शाखेचे आकर्षण, उत्सुकता व अभिमान हा सर्व काळात सारखाच आहे.

प्राध्यापक- अमोल पारखे

विद्युत अभियांत्रिकी

Rain Water Harvesting

All living things including, plants, animals and human beings need water to live and to carry out different cellular activities.

What is Rainwater harvesting?

Rainwater harvesting is the simple process or technology used to conserve Rainwater by collecting, storing, conveying and purifying of Rainwater that runs off from rooftops, parks, roads, open grounds, etc. for later use.

How to Harvest the Rainwater?

Rainwater harvesting systems consists of the following components:

- Catchment- Used to collect and store the captured Rainwater.
- Conveyance system – It is used to transport the harvested water from the catchment to the recharge zone.
- Flush- It is used to flush out the first spell of rain.
- Filter – Used for filtering the collected Rainwater and remove pollutants.
- Tanks and the recharge structures: Used to store the filtered water which is ready to use.

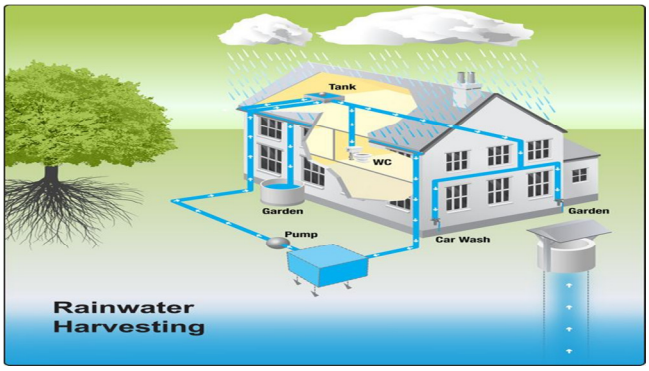
The process of rainwater harvesting involves the collection and the storage of rainwater with the help of artificially designed systems that run off naturally or man-made catchment areas like- the rooftop, compounds, rock surface, hill slopes, artificially repaired impervious or semi-pervious land surface.

Several factors play a vital role in the amount of water harvested. Some of these factors are:

- The quantum of runoff
- Features of the catchments
- Impact on the environment
- Availability of the technology
- The capacity of the storage tanks
- Types of the roof, its slope and its materials
- The frequency, quantity and the quality of the rainfall
- The speed and ease with which the Rainwater penetrates through the subsoil to recharge the groundwater.

Why do we Harvest Rainwater?

The rainwater harvesting system is one of the best method practiced and followed to support the conservation of water. Today, scarcity of good quality water has become a significant cause of concern. However, Rainwater, which is pure and of good quality, can be used for irrigation, washing, cleaning, bathing, cooking and also for other livestock requirements



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Advantages of Rainwater Harvesting

The benefits of rainwater harvesting system are listed below.

- Less cost and not require a filtration system
- Helps in reducing the water bill.
- Decreases the demand for water.
- Reduces the need for imported water.
- Promotes both water and energy conservation.
- This technology is relatively simple, easy to install and operate.
- It reduces soil erosion, stormwater runoff, flooding, and pollution of surface water
- It is an excellent source of water for landscape irrigation with no chemicals and dissolved salts and free from all minerals.

Disadvantages of Rainwater Harvesting

- Regular Maintenance is required.
- Requires some technical skills for installation.
- Limited and no rainfall can limit the supply of Rainwater.
- If not installed correctly, it may attract mosquitoes and other waterborne diseases.

Mrs. D.B. Mogal,
Lecturer- Science & Humanity Department

How Data Science is set to rule in 2020

This is just a very small example of the extent of the impact technology has had on the world.

Speaking of the dawn of the new decade has brought with it a plethora of promise for the tech world. Concepts such as Machine Learning, Artificial Intelligence and Augmented Reality are growing in power day by day. Singing on a similar tune comes in data science- the hot prospect, the buzzword of today's times, and a tantalising aspect of technology to explore for budding techies. You might

have heard the term thrown around many times, but what does it actually mean? Is it worth learning? Let's find out if data science can rule the tech world in 2020.

What do data scientists actually do?

In addition to the evergreen field of Data Analytics, Data Scientists add something more to the game. Imagine data analysts having more freedom to pursue their ideas and experiment with the data they work on, instead of following standard procedures. Data scientists make use of machine learning models to deliver accurate predictions based on past data.

What data science requires is the following:

- Extensive knowledge of programming languages focused around data, such as Python and R
- Statistical modelling knowledge
- Mathematics background (although numerous libraries make it easier for coders to implement math concepts in their data science models)

You now know what data science requires to be done. But what makes the statement "Data science set to rule 2020" carry so much weight? Here's the lowdown and then there was data With the arrival of the new decade, we have taken a leap of faith into the next era of how we live our lives, and interact with technology. Data is at the front and centre of all such interactions and the sheer volume of data processed every minute around us can drive simpletons crazy.

Now, when there's so much data being thrown around, there has to be a method to organise, analyse and put it to use, right? There is! This is where data science comes in. Data science is what brings together businesses, we might even say data science is what takes businesses to the next level! Formulating product strategies, increasing operational efficiency and much more is done with the help of data science. Want to read more about Data Science.

Data Visualisation

To ride the wave of data science in your career, be sure to learn visualisation skills first. By adding the much-needed knowledge of analytical tools to perform data visualisation, you can land the best of jobs in data science.

Previously gathered data on the specified field is taken, and data scientists work their magic on it to help gain valuable insight. This insight is then transformed into suggestions, or strategies, whatever the higher-ups at the organisation prefer. Data science entails the freedom to build your own models to analyse and organise data, and this is where it is different from regular analytics.

In 2020, odds are that we will consume or generate more data than ever before. Therefore, the existence of data science becomes all the more important, helping put this data to good use. With almost all brands, companies, firms and organizations that are relying on data to drive their profits, there is no question on the usefulness of data science as a field, and the future prospects of data science as a career.

If you are looking to pursue something out of the ordinary, are interested in the life and lies of data, and want to make good money doing such a job, then data science is the perfect fit for you!

Therefore, one may safely say that data science is set to rule 2020 and beyond

Mr. Yashodhan Pagar
TYCM

Robotic process automation (or RPA)

is a form of business process automation technology based on metaphorical software robots or on artificial intelligence digital workers. It is sometimes referred to as software robotics .In traditional workflow automation tools, a software developer produces a list of actions to automate a task and interface to the back-end system using internal application programming interfaces (APIs) or dedicated scripting language. In contrast, RPA systems develop the action list by watching the user perform that task in the application's graphical user interface GUI, and then perform the automation by repeating those tasks directly in the GUI. This can lower the barrier to use of automation in products that might not otherwise feature APIs for this purpose. RPA tools have strong technical similarities to graphical user interface testing tools. These tools also automate interactions with the GUI, and often do so by repeating a set of demonstration actions performed by a user. RPA tools differ from such systems in that they allow data to be handled in and between multiple applications, for instance, receiving email containing an invoice, extracting the data, and then typing that into a bookkeeping system.

The typical benefits of robotic automation include reduced cost; increased speed, accuracy, and consistency; improved quality and scalability of production. Automation can also provide extra security, especially for sensitive data and financial services.

As a form of automation, the concept has been around for a long time in the form of screen scraping, which can be traced back to early forms of malware. However, RPA is much more extensible, consisting of API integration into other enterprise applications, connectors into ITSM systems, terminal services and even some types of AI Machine Learning services such as image recognition. It is considered to be a significant technological evolution in the sense that new software platforms are emerging which are sufficiently mature, resilient, scalable and reliable to make this approach viable for use in large enterprises that would otherwise be reluctant due to perceived risks to quality and reputation.

A principal barrier to the adoption of self-service is often technological: it may not always be feasible or economically viable to retro-fit new interfaces onto existing systems. Moreover, organizations' may wish to layer a variable and configurable set of process rules on top of the system interfaces which may vary according to market offerings and the type of customer. This only adds to the cost and complexity of the technological implementation. Robotic automation software provides a pragmatic means of deploying new services in this situation, where the robots simply mimick the behaviour of humans to perform the back end transcription or processing. The relative affordability of this approach arises from the fact that no IT new transformation or investment is required instead the software robots.

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Happy
Happy Teacher's Day, International Literacy Day, Engineer's Day and World Heart Day to
All Readers on the behalf of Principal, Faculty, Supporting Staff and Students.

Dr. D. B. Uphade
Principal