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RSM POLY NEWSLETTER - MARCH 2021

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 106 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 "Well being 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.



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MVP RSM Polytechnic

 Karmveer Bhausaheb Hire Birth Anniversary (2nd Mar 2021)



The birth anniversary of Karmveer Bhausaheb Hire was celebrated by faculties and supporting staff members.

 Karmveer Adv. Baburao Thakare Birth Anniversary (12th Mar 2021)



The birth anniversary of Karmveer Adv. Baburao Thakare was celebrated by faculties and supporting staff members with social distancing.



 Karmveer Raosaheb Thorat Death Anniversary (13th Mar 2021)



The death anniversary of Karmveer Raosaheb Thorat was celebrated by faculties and supporting staff members with social distancing.

 Conducted Skill Development Program on Robotics (6th Mar 2021)





Organised by MVPS RSM e-Yantra Team Objectives

- To incorporate the Robotics skills.
 To develop small projects based on Robots.
 To know the applications of robots in Industry
- ✓ The learner will be able recognize the function and application of given robot.
 ✓ The learner will be able to create his/her own small projects.
- The learner will be able to use various sensors of FireBird-V.

 Recourse Persons: Prof. N. A. Gade, Prof. P. N. Patil, Prof. S.S. Tile & Prof. M.S. Aware

Program Details 6th March 2021 01:00 pm Onwards

Google Meet# Link will be provided in class group Participants All First Year Students

Prof. N. A. Gade Me-Yantra CO-ORDINATOR

!!! STAY HOME, STAY SAFE !!!

Dr. D. B. Uphade

MVPS's RSM e-Yantra Team had organized a One Day Online Skill Development Program on ROBOTICS for First Year students of all branches by Prof. N. A. Gade, MVPS's RSM e-Yantra Coordinator and Team. The event was coordinated by Prof. N. A. Gade.

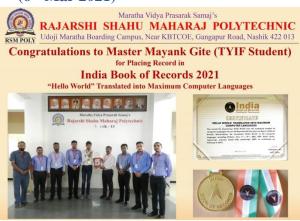


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 Felicitaton of Mast. Mayank Gite (6th Mar 2021)



MVPS's RSM Polytechnic, Nashik had felicitated Mast. Mayank Gite (TYIF) for placing Record in India Book of Records 2021. He had translated "Hello World Program" into Maximum Computer Language.

 Women's Day Celebration (8th Mar 2021)



MVPS's Rajarshi Shahu Maharaj Polytechnic was celebrated Women's Day organized by Prof. P. G. Deshmukh and Prof. S. S. Tile. Mrs. Jyoti Sarode and Mrs. Preeti Nagar (Health counselor) were the guests for the program. Organized Campus Recruitment Drive-2021 (27th Mar 2021)



MVPS's RSM TPO Dept. had organized Campus Drive of Kosho Ltd., Vaishnavi Automobiles & Bajaj Sons for Mechanical Dept. Students. The Drive was Organized and coordinated by Prof. Y. R. Kodhilkar.





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NEWSLETTER: MARCH 2021

Mechanical Engineering Department			Computer Technology Department			
Sr#	Activities	Date(s)	Sr#	Activities	Date(s)	
1.	Conducted Guest Lecture on Personality Development	26 th Mar 2021	1.	Conducted Skill Development Program on Windows Operating System Installation	25 th Mar 2021	
2.	Conducted Guest Lecture on Exploring the world with Languages	26 th Mar 2021	2.	Conducted Guest Lecture on Introduction of RSM Virtual Lab	31 st Mar 2021	
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Elect	Electronics & Telecomm Department			Information Technology Department		
1.	Attended FDP on Antenna: Design and Analysis Phase II	1 st Mar 2021 to 6 th Mar 2021	1.	Organized One Day Workshop on Programming in C	27 th Mar 2021	
2.	Conducted Guest Lecture on Introduction of RSM Virtual Lab	26 th Mar 2021	7	3/8		
TECTO			बहुणन ज			
Electrical Engineering Department			Science and Humanity Department			
1.	Conducted Guest Lecture on Introduction of RSM Virtual Lab	30 th Mar 2021	1.	Conducted Guest Lecture on Soft Skills	31 st Mar 2021	
2.	Conducted Skill Development Program on Electrical Wiring and Maintenance	30 th Mar 2021	2.	Conducted Guest Lecture on Career Guidance	31 st Mar 2021	
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Mechanical Engg. Department

 Conducted Guest Lecture on Personality Development (26th Mar 2021)



Online Guest Lecture on Personality Development had organized by Mech. Engg. Dept. for Second and Third Year students of ME and Staff. Mr. Akshay Bhadane (Managing Director, Komal Enterprises, Nashik) delivered Lecture. The event was coordinated by Prof. M. S. Aware and Prof. C. P. Gaikwad.

 Conducted Guest Lecture on Exploring the world with Languages (26th Mar 2021)



Online Guest Lecture on Exploring the world with Languages had organized by Mech. Engg. Dept. for Second and Third Year students of ME and Staff. Ms. Ketki Nitin Gorhe (Vishwa Institute of Language Studies and Research, Nashik) delivered

Lecture. The event was coordinated by Prof. K. V. Kushare and Dr. H. K. Mishra.

Computer Department

 Conducted Skill Development Program on Windows Operating System Installation (25th Mar 2021)



Mr. P. D. Boraste

Maratha Vidya Prasarak Samaj's **Rajarshi Shahu Maharaj Polytechnic, Nashik**Udoji Maratha Boarding Campus, Near KBTCOE, Gangapur Road, Nashik-13

Online Skill Development Program on "Windows Operating System Installation"

Organised by Computer Technology Department

Objectives:

\(\text{To make students acquainted with System Formatting and Operating System Installation.} \)

\(\text{To make students acquainted with Hard disk Partition and create user Basic Settings.} \)

Outcomes:

\(\text{Participants will be acquainted with System Formatting and Operating System Installation.} \)

\(\text{Participants will be acquainted with System Formatting and Operating System Installation.} \)

\(\text{Participants will be acquainted with Hard disk Partition.} \)

\(\text{Participants will be acquainted with Create User and Basic Settings.} \)

Schedule

Date: 25° March 2021

Time: 02:00 pm to 3.00 PM

For Second, Third Year Students of Computer Technology

\(\text{Meet Link} \)

https://meet.google.com/j
kb-boak-vzz

!!! STAY HOME, STAY SAFE !!!

Online Skill Development Program had organized on Windows Operating System Installation for SYCM and TYCM students by Computer Technology Department. The session was conducted and coordinated by Mrs. J. P. Patil.

 Conducted Guest Lecture on Introduction of RSM Virtual Lab (31st Mar 2021)



Maratha Vidya Prasarak Samaj's **Rajarshi Shahu Maharaj Polytechnic, Nashik**Udoji Maratha Boarding Campus, Near KBT COE, Gangapur Road, Nashik-13

Organised by Computer Technology Department

A Introductive Online Lecture on "Virtual Lab"



- Objectives:

 √ To provide remote-access to Labs in various disciplines of Science and
- Engineering.

 To enthuse students to conduct experiments by arousing their curiosity.
 To Provide a complete Learning Management System around the Virtual Labs.
- V-Lab is able to enhance student's problem solving, critical thinking, creativity, conceptual understanding science process skills, lab skills, motivation, interest, perception and learning outcomes.

Schedule Date : 31st March 2021 Time : 2:00 pm to 3:00 pm For Second and Third Year Students of Computer Technology Dept. Meet Link: https://meet.google.com/o rm-dsij-eey

Mr. P. D. Borast HOD-CM !!! STAY HOME, STAY SAFE !!!

Dr. D. B. Uphade

Dr. D. B. Uphade



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Computer Technology Department had organized Guest Lecture on Introduction of RSM Virtual Lab for SYCM and TYCM Students. The session was conducted and coordinated by Prof. S. V. Sarode.

E & TC Engineering Department

 Attended FDP on Antenna: Design and Analysis Phase II

(1st Mar 2021 to 6th Mar 2021)



FDP on Antenna: Design and Analysis Phase II sponsored by AICTE and ISTE had attended by Prof. P. G. Deshmukh and Mrs. N. D. Athare. Its was organized by St. Xavier's Technical Institute, Mahim, Mumbai

 Conducted Guest Lecture on Introduction of RSM Virtual Lab (26th Mar 2021)



E & TC Department had organized Guest Lecture on Introduction of RSM Virtual

Lab for TYEJ Students. The session was conducted and coordinated by Prof. S. A. Suryawanshi.

Information Technology Department

 Organized One Day Workshop on Programming in C (27th Mar 2021)

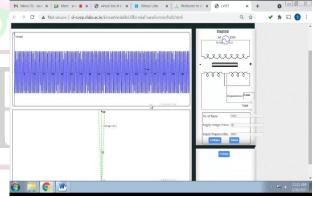


Online One Day Workshop on Programming in C had organized by IF Dept. for Second and Third Year students and Staff. Mast. Parth Patel, Alumni RSM Polytechnic and CEO, Tech Shah Pvt. Ltd, Nashik delivered Lecture. Prof. S. S. Tile coordinated the event.

Electrical Engineering Department

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 Conducted Guest Lecture on Introduction of RSM Virtual Lab (30th Mar 2021)





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Electical Engg. Department had organized Guest Lecture on Introduction of RSM Virtual Lab for TYEE Students. The session was conducted and coordinated by Ms. S. S. Sangamnere.

 Conducted Skill Development Program on Electrical Wiring and Maintenance (30th Mar 2021)

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Online Skill Development Program had organized on Electrical Wiring and Maintenance for SYEE students by Electical Engg. Department. The session was conducted and coordinated by Prof. P. R. Gangurde.

Science and Humanity Department

Conducted Guest Lecture on Soft Skills (31st Mar 2021)

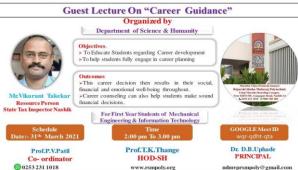


Online Guest Lecture on Soft Skills had organized by Science and Humanity

Department for First Year students of CM, EJ and EE Dept. Prof. Sachin Bagul delivered Lecture. The event was coordinated by Prof. D. B. Mogal.

 Conducted Guest Lecture on Career Guidance (31st Mar 2021)





Online Guest Lecture on Career Guidance had organized by Science and Humanity Department for First Year students of ME and IF Dept. Mr. Vikrant Takekar delivered Lecture. The event was coordinated by Prof. P. V. Patil.

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Trending Technology:

Drilling Mechanism Investigation on SiC Ceramic Using Diamond Bits



1. Introduction SiC ceramic have been widely used in the fields of armor protection, but SiC ceramic is one of the difficult-to-machine material for its high hardness and low fracture toughness. This article presents an investigation of drilling

mechanism on SiC ceramic using diamond bits. Based on the theory of indentation fracture mechanics model, cutting average load model and cutting average depth model for single particle were established, theory analysis of drilling mechanism was carried out; through scanning electron microscope (SEM) observation, experimental removal mechanism was discussed.

The results show that, brittle fracture is the dominant way for.

2. MATERIALS AND METHODS

Hot pressing sintering diamond bits and electroplated diamond bits were used in the experiment. The structure of sintering diamond bit is shown in Fig. (1), which is composed of working layer, transition layer and basal body. Working layer is made by diamond abrasives and metal bond through hot pressed sintering in which diamonds disperse in bonds randomly; transition layer is used to connect working layer and basal body which is composed of binder powder; basal body is made by 45 # steel.

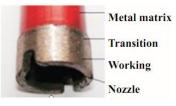


Fig. (1). Sintering diamond bit.

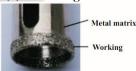


Fig. (2). Electroplated diamond bit.

SiC ceramic (99.5 wt%) used in the experiment is 10 mm in thickness, density is 3.28 g/cm, fracture toughness is 3.9 MPa·m^{1/2}, vickers hardness is 26 GPa, modulus of elasticity is 430 GPa, flexural strength is 580 MPa (25 C), which is shown in Fig.(3).



Fig. (3). SiC ceramic.

The experiment was carried out on ZXL-20 drilling milling machine whose rated power is 750 W, spindle speed of 1800 RPM, 2600 RPM and 3200 RPM were available. Constant feeding pressure of 695 N, 735 N, 795 N, 835 N was adopted, which was achieved by applying weights (9 kg, 10 kg, 11 kg, 12 kg respectively) on the drilling milling machine. Pure water cooling was used during the experiment to reduce the temperature on grinding surface, whose cooling fluid pressure was 0.3 MPa, cooling fluid flow was 120 cc/s. JMS-6300 scanning electron microscope was used to observe the grinding surface. Gold was sprayed in grinding surface before observation to ensure its electrical conductivity.

The experiments setup is shown in Fig. (4).

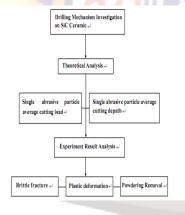


Fig. (4). Experiments setup.

3. RESULTS AND DISCUSSION

3.1. Theoretical Analysis

According to the indentation fracture mechanics model, when normal load of single abrasive particle is greater than a certain critical load, cracks will be produced on ceramic surface, and brittle fracture occurs when cracks extend to free surface; when normal load of single abrasive particle is smaller than the certain critical load, cracks will not be produced, there is only plastic deformation on the material surface caused by the friction of abrasive particles. Therefore, SiC ceramic removal mechanisms can be judged by calculating



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single abrasive particle average cutting load and single abrasive particle average cutting depth.

3.2. Experiment Result Analysis

Grooves and scratches with different length caused by plastic deformation and pits caused by brittle fracture damage can be found on the drilling surface by scanning electron microscope, which are shown in Fig 5.



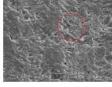


Fig. (5). Drilling surface of SiC ceramic.

The reasons of generating cracks include two aspects: one is that transverse crack system and the central/radial crack system produced by the indentation fracture effect; the other is the residual stresses produced by temperature changes. Cracks are mainly divided into two categories, one is perpendicular to the drilling direction and the other is parallel to the drilling direction.

CONCLUSION

- 1. The average cutting load and the minimum cutting depth of single abrasive are far greater than the critical cutting load and the critical cutting depth of SiC ceramic under experimental conditions, which indicate that brittle fracture is the dominant removal way for SiC ceramic.
- 2. SEM Photos show brittle fracture is the dominant characteristic, powdering and plastic deformation are also accompanied by the drilling process. Experimental results are consistent with the theoretical analysis.

Dr. Hredeya Mishra LME

Six Stroke Engine Technologies HISTORY



The term six-stroke engine has been applied to a number of alternative internal combustion engine designs that attempt to improve on traditional two stroke and four-

stroke engines. Claimed advantages may include increased fuel efficiency, reduced mechanical complexity and/or reduced emissions. These engines can be divided into two groups based on the number of pistons that contribute to the six strokes.

In the single-piston designs, the engine captures the heat lost from the four-stroke Otto cycle or Diesel cycle and uses it to drive an additional power and exhaust stroke of the piston in the same cylinder in an attempt to improve fuel efficiency and/or assist with engine cooling. The pistons in this type of six-stroke engine go up and down three times for each injection of fuel. These designs use either steam or air as the working fluid for the additional power stroke.

INTRODUCTION

The majority of the actual internal combustion engines, operating on different cycles have one common feature, combustion occurring in the cylinder after each compression, resulting in gas expansion that acts directly on the piston (work) and limited to 180 degrees of crankshaft angle. According to its mechanical design, the six-stroke engine with external and internal combustion and double flow is similar to the actual internal reciprocating combustion engine. Six-stroke engine differentiates itself due to its thermodynamics cycle and a modified cylinder having one combustion chamber and one air heating chamber, both independent from cylinder. Combustion does not occur within the cylinder but in the supplementary combustion chamber, does not act immediately on the piston, and its duration is independent from the 180 degrees of crankshaft rotation that occurs during the expansion of the combustion gases (work). The combustion chamber is kept inside the air heating chamber.

BENEFITS

The six-stroke engine has the following advantages:

- 1) Thermal efficiency reaching 50%. (30% for the actual internal combustion engines)
- 2) Fuel consumption reduced by more than 40%.
- 3) Reduction of chemical, noise and thermal pollution.
- 4) Two expansions (work) through six strokes. 5) Direct injection and optimal fuel combustion at every engine speed.

In six-stroke cycle, two parallel functions occur in two chambers which result in eight event cycle: four event internal combustion cycle and four event external combustion cycles.



Fig. 01-3D diagram of Six stroke Engine



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TYPES OF SIX STROKE ENGINE

A Single piston designs

These designs use a single piston per cylinder, like a conventional two- or four-stroke engine. A secondary, no detonating fluid is injected into the chamber, and the leftover heat from combustion causes it to expand for a second power stroke followed by a second exhaust stroke.

A.1 Griffin six-stroke engine

Heated exhaust-jacketed external vaporizer, into which fuel was sprayed, was the main principle of working of griffin six stroke engines.

A.2 Bajulaz six-stroke engine

The Bajulaz six-stroke engine is similar to a regular combustion engine in design. There are, however, modifications to the cylinder head, with two supplementary fixed capacity chambers: a combustion chamber and an air preheating chamber above each cylinder.

A.3 Velozeta six-stroke engine In a Velozeta engine, fresh air is injected into the cylinder during the exhaust stroke, which expands by heat and therefore forces the piston down for an additional stroke. The valve overlaps have been removed and the two additional strokes using air injection provide for better gas scavenging.

A.4 NIYKADO Six Stroke Engine This is the only engine that is categorized as a fully working prototype. The first prototype was developed in 2004, which used only two valves.

WORKING OF SIX STROKE ENGINE

Different working strokes of a six stroke engine are:

1st stroke (suction stroke) the inlet valve is kept open.

Due to cranking, Piston moves downward which results in the formation of a pressure difference due to which pure air enters the cylinder. 2nd stroke (compression stroke)

The inlet valve closes and the heating chamber valve opens. The piston moves upward due to cranking forcing air into heating chamber. The air at this stage is converted to high pressure.

3rd stroke (1st power stroke)

The combustion chamber valve opens and gases of combustion enter the cylinder. 4th stroke (exhaust stroke)

The exhaust valve opens. The piston moves upwards and the exhaust gases are removed via this valve. 5th stroke (2nd power stroke)

The chamber valve opens and the pure air now at high pressure and high temperature enters the cylinder which does work on the piston and hence it moves downward resulting in the 2nd power stroke. 6th stroke (2nd exhaust stroke)

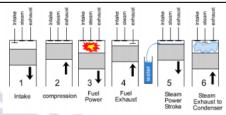


Fig.02- working of six stroke engine

CONCLUSION

Billions of explosion engines are running worldwide at this time, and this era is not about to end. It is commercially obvious that the big market if for automobile, heavy goods, construction-site and farm vehicles. This is a priority for the six-stroke engine. Reducing fuel consumption and pollution without any effect on performance will reassessed the concept of automobile.

Mast. Abhishek Mote TYME

Google Glasses



Google Glass is a wearable, voiceand motion
controlled Android device that
resembles a pair of eyeglasses
and displays information directly in
the user's field of vision.Google Glass
offers an augmented

reality experience by using visual, audio and locationbased inputs to provide relevant information. For example, upon entering an airport, a user could automatically receive flight status information.

When the first version was launched in 2013, consumers immediately voiced their concern of the glasses being an invasion of privacy. Google Glass represented inescapable recording in everyday life. At first, Google attempted to rebrand the glasses as a tool for professionals such as surgeons or factory workers. However, concern remained and Google ceased all work on the Glass project in 2015.

In 2017 work resumed with Glass Enterprise Edition. This relaunch of the project focused all efforts on making a product that would benefit workplaces like factories and warehouses. In 2019, a new version of Google Glass was released -- the Glass Enterprise Edition 2.

How Google Glasses work

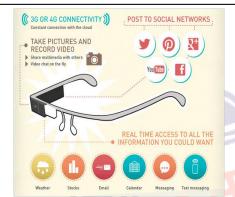
The Google Glass operating system (OS) is based on a version of Android. The OS can run application virtualization tools called Glassware that are optimized for the device. Glassware allows the device to deliver an app to the user, instead of a full desktop.



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The glasses have built in WiFi and Bluetooth connectivity and a camera for taking photographs and videos.

The smart eyewear uses motion and voice recognition to process commands from the wearer. A touchpad is also available on the glasses' rim. To provide the requested information, the device relies on sending small packages of information straight to the wearer through a micro-projector, using a private channel of communication that can only be accessed by the user. Google Glass then uses a field sequential color (FSC) liquid crystal on silicon (LCOS) system to display images on the lens, allowing wearers to view the image in true colors. FSC refers to a color television system that transmits the primary color information in

Features of Google Glass

The key feature of Google Glass is the tiny semitransparent screen located on the upper right hand side of the glasses. This display occupies only about 5 percent of the wearer's natural field of vision and is responsible for transmitting information to the user. In order to view the screen, wearers must look up,

continuous images and then relies on the human's vision

and perception to collect the information into a color

picture. LCOS is a form of video display technology.

In order to view the screen, wearers must look up, placing the screen out of the direct line of vision. This feature is particularly important because bad placement of the display could lead to serious safety issues.

Prof. P. D. Boraste LCM

Data warehousing



In computing, a data warehouse (DW or DWH), also known as an enterprise data warehouse (EDH), is a system used for reporting and data analysis, and is considered a core component of business Intelligence.

DWs are central repositories of integrated data from one or more disparate sources. They store current and historical data in one single place that are used for creating analytical reports for workers throughout the enterprise.

The data stored in the warehouse is uploaded from the operational systems (such as marketing or sales). The data may pass through an operational data store and may require data cleansing for additional operations to ensure data quality before it is used in the DW for reporting.

Most simply, a data warehouse is a collection of data created to support decision making. User and applications access the warehouse for the data that they need. A warehouse provides a data infrastructure. It eliminates a reason for the failure of many decision support applications.

Extract, transform, load (ETL) and extract, load, transform (ELT) are the two main approaches used to build a data warehouse system. The typical extract, transform, load (ETL)- based data warehouse uses staging, data integration, and access layers to house its key functions. The staging layer or staging database stores raw data extracted from each of the disparate source data systems. The integration layer integrates the disparate data sets by transforming the data from the staging layer often storing this transformed data in an operational data store (ODS) database. The integrated data are then moved to yet another database, often called the data warehouse database, here the data is arranged into hierarchical groups, often dimensions, and into facts and aggregate facts. The combination of facts and dimensions is sometimes called a star schema. The access layer helps users retrieve data. The main source of the data is cleansed, transformed, catalogued, and made available for use by managers and other business professionals for mining, online analytical processing, market research and decision support. However, the means to retrieve and analyze data, to extract, transform, and load data, and to manage the data dictionary are also considered essential components of a data warehousing system. Many references to data warehousing use this broader context. Thus, an expanded definition for warehousing includes business intelligence tools, tools to extract, transform, and load data into the repository, and tools to manage and retrieve metadata.

IBM InfoSphere DataStage, Ab Initio Software, Informatica – PowerCenter are some of the tools which are widely used to implement ETL-based data warehouse.

ELT-based data warehousing gets rid of a separate ETL tool for data transformation. Instead, it maintains a staging area inside the data warehouse itself. In this approach, data gets extracted from heterogeneous source systems and are then directly loaded into the



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data warehouse, before any transformation occurs. All necessary transformations are then handled inside the data warehouse itself. Finally, the manipulated data gets loaded into target tables in the same data warehouse.

Ms. Nikita Thorat Student TYCM

Nano electromechanical System



Context: The Nano electromechanical system integrates Nano-size electronics elements with mechanical machines to form physical and chemical sensors. They form the logical next miniaturization

step from so-called micro electromechanical systems. They have incredible properties, which pave the way to various applications, ranging from ultrahigh-frequency resonators to chemical and biological sensors.

How it works?

Nano electromechanical Systems

Nanoelectromechanical systems (NEMSs) are devices that integrate electrical and mechanical functions at the Nano scale. They consist of miniaturized electrical and mechanical apparatuses such as actuators, beams, sensors, pumps, resonators, and motors. These components convert one form of energy into another, which can be quickly and conveniently measured. These devices can function as biosensors to monitor important physiological variables during surgical procedures, such as intracranial pressure, cerebrospinal fluid (CSF) pulsatility, weight load, and strain.

Description:-Nano electromechanical systems (NEMS) are drawing interest from both technical scientific and communities. These are electromechanical systems, much like microel ectromechanical systems, mostly operated their resonant modes with dimensions in the deep submicron. In this size regime, they come with extremely high fundamental resonance frequencies, diminished active masses, and tolerable force constants; the quality (Q) (Q) factors of resonance are in the range

About: - Nano electromechanical systems are a class of devices integrating electrical and mechanical functionality on the nano scale. NEMS form the next logical miniaturization step from so-called micro electromechanical

Nano electromechanical systems are evolving, with new scientific studies & technical applications emerging. Mechanical devices are shrinking in thickness & width to reduce mass, increase resonant frequency. And lower

the force constant of these system. Advances in the field include improvements in fabrication process and new method for actuating and detecting motion at the Nano scale.

Advantages:

- 1) Cost reduction
- 2) Low power consumption
- 3) High resonating frequency

Conclusion: Transitioning Nano scale devices from the realm of one-of-a-kind feats into robust and reproducible Nano systems - that is, useable technology - is a monumental challenge that transcends the capabilities of any one laboratory. Some solid progress is now being achieved toward this end, and these efforts are critical for realizing the promise of nanotechnology.

Mrs. C. K. Bhor TAEJ

Artificial intelligence & machine Learning



Context: While machine learning is based on the idea that machines should be able to learn and adapt through experience, AI refers to a broader idea where machines can execute tasks "smartly." Artificial Intelligence applies machine

learning, deep learning and other techniques to solve actual problems.

How it works? Machine learning, or ML, is an application of AI that provides computer systems with the ability to automatically learn and improve from experience without being explicitly programmed. ML focuses on the development of algorithms that can analyze data and make predictions.

Description: While machine learning is based on the idea that machines should be able to learn and adapt through experience, AI refers to a broader idea where machines can execute task "smartly." Artificial Intelligence applies machine learning, deep learning and other techniques to solve actual problems.

About: Artificial Intelligence, or AI, has already received a lot of buzz in the past decade, but it continues to be one of the new technology trends because of its notable effects on how we live, work and play are only in the early stages. AI is already known for its superiority in image and speech recognition, navigation apps, smartphone personal assistants, ride-sharing apps and so much more. Other than that AI will be used further to analyze interactions to determine underlying connections and insights, to help predict demand for services like hospitals enabling authorities to make better



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decisions about resource utilization, and to detect the changing patterns of customer behavior by analyzing data in near real-time, driving revenues and enhancing personalized experiences.

Advantages:

- 1) Reduction in Human
- 2) Faster Decisions

Conclusion: Artificial Intelligence and Machine Learning are products of both science and myth. The idea that machines could think and perform tasks just as humans do is thousands of years old. But the potential of AI and machine intelligence for good does not lie exclusively, or even primarily, within its technologies.

Ms. Pooja Dhondge Student, TYEJ

Network Security—Security Technique

A cyber attack is an assault launched by cybercriminals using one or more computers against a single or multiple computers or networks. A cyber attack can

maliciously disable computers, steal data, or use a breached computer as a launch point for other attacks. Cybercriminals use a variety of methods to launch a cyber attack, including malware, phishing, ransom ware, denial of service, among other methods. Cyber Attacks in the News

Solar Winds Sunburst Attack

The world is now facing what seems to be a 5th generation cyber-attack – a sophisticated, multi-vector attack with clear characteristics of the cyber pandemic. Named Sunburst by researchers, we believe this is one of the most sophisticated and severe attacks ever seen. The attack has been reported to impact major US government offices as well as many private sector organizations.

This series of attacks was made possible when hackers were able to embed a backdoor into Solar Winds software updates. Over 18,000 companies and government offices downloaded what seemed to be a regular software update on their computers, but was actually a Trojan horse. By leveraging a common IT practice of software updates, the attackers utilized the backdoor to compromise the organization's assets enabling them to spy on the organization and access its data

- 1. Prevention from cyber-attack Train employees in cyber security principles.
- Install, use and regularly update antivirus and antispyware software on every computer used in

your business.

- 3. Use a firewall for your Internet connection.
- 4. Download and install software updates for your operating systems and applications as they become available.
- Make backup copies of important business data and information.
- Control physical access to your computers and network components.
- 7. Secure your Wi-Fi networks. If you have a Wi-Fi network for your workplace make sure it is secure and hidden.
- 8. Require individual user accounts for each employee.
- 9. Limit employee access to data and information and limit authority to install software.
- 10. Regularly change passwords.

Ms S.S.Rajole LIF

Bitcoin Mining



Chances are you hear the phrase "bitcoin mining" and your mind begins to wander to the Western fantasy of pickaxes, dirt andstriking it rich. As it turns out, that analogy isn't too far off. Bitcoin mining is performed by high- powered computers that solve complex computational math

problems; these problems are so complex that they cannot be solved by hand and are complicated enough to tax even incredibly powerful computers.

Bitcoin mining is the process of creating new bitcoin by solving a computational puzzle. Bitcoin mining is necessary to maintain the ledger of transactions upon which bitcoin is based.

Miners have become very sophisticated over the last several years using complex machinery to speedand applications as they become available.

The result of bitcoin mining is twofold. First, when computers solve these complex math problems on the bitcoin network, they produce new bitcoin (not unlike when a mining operation extracts gold from the ground). And second, by solving computational math problems, bitcoin miners make the bitcoin payment network trustworthy and secure by verifying its transaction information



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Verifying Bitcoin Transactions

In order for bitcoin miners to actually earn bitcoin from verifying transactions, two things have to occur. First, they must verify one megabyte (MB) worth of transactions, which can theoretically be as small as one transaction but are more often several thousand, depending on how much data each transaction store. Basically, a miner's computer spits out hashes at different rates—megahashes per second (MH/s), gigahashes per second (GH/s), or terahashes per second (TH/s)—depending on the unit, guessing all possible 64-digit numbers until they arrive at a solution. In other words, it's a gamble.

Yash Patil Student, TYIF

Automation Based Load Sharing and Operating Circuit Breaker by Using PLC



Electric power distribution system is an main part of electrical power systems in delivery of electricity to consumers. Automation in the distribution field allows utilities to implement flexible control of

distribution systems, which can be used to improve efficiency, reliability, and quality of electric service. By the help of this paper we present a model of automatic distribution system. In any substation when number of incoming feeders to any substation is more than one then we can transfer total output feeder to any number of incoming feeder without interrupting power supply in case of failure of any one or more than feeder. In this case, Incoming feeder must be design to carry total output feeder's current. In case of project ON/OFF operations the time span between failures of supply at any incoming feeder to the transfer of load to another feeder is much more.

Introduction:

The word Automation means doing the particular function automatically in a sequence with faster operation rate. This requires, use of microprocessor together with communication network and some relevant software programming. Application of

automation in the distribution power system level can be define as automatically monitoring, protecting and controlling switching operations with the help of intelligent electronic devices to restore power service during fault by sequential events and maintain good operating conditions back to normal operations. Now a days due to advancement in a communication technology, distribution automation system (DAS) is not just the remote control and operation of substation and feeder equipment but it results into a highly reliable, self-healing, detecting, etc power system that responds rapidly to real-time events with appropriate actions. Hence, automation does not just replace manual procedures; it permits the power system to operate in better optimal way, based on accurate information provided in a timely manner to the decision-making applications and devices. Distribution Automation Systems have been defined by Institute of Electrical and Electronic Engineers (IEEE) as systems that enable an electrical utility to monitor, coordinate, and operate distribution components in the real time mode from remote locations there are three major loads in the electrical power line. Ideally electrical power system should serve all the three area uninterrupted power supply. Power distribution system cannot always function smoothly, there are faults occurring in the power system. it becomes important to tackle this kind of situation.

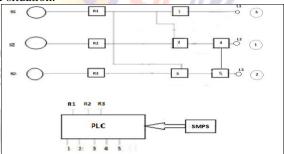


Fig1: Block Diagram of Automatic load Shearing System

If fault occurs in any feeder of substation the load must be shared by the healthy feeder. Suppose if fault occurs in the feeder which is supplying power to the industrial load during the day time, it will lead to more loss for the industrial areas which has affected due to fault. in this condition the feeder supplying for village is transferred to the industrial load, depending upon importance and requirement the priority is given for the particular area. Automation of primary distribution system is well established, due to impact of supply loss on the many and diverse consumer that it serves.

> Mrs. P. R. Gangurde LEE



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Analysis of Wind Energy System



Nowadays, most countries of the world are facing difficulties in using conventional sources for power generation due to exhaustion of fossil fuels and environmental issues. Wind energy, is one of the available non-

conventional energy sources, which is clean and an infinite natural resource. Variable speed wind energy systems have several advantages compared with fixed speed wind energy systems such as yielding maximum power output, developing low amount of mechanical stress, improving efficiency and power quality. Power electronics devices with a variable speed system are very important, where AC-DC converter is used to convert AC voltage with variable amplitude and frequency at the generator side to DC voltage at the DClink voltage. The DC voltage is converted again to AC voltage with constant amplitude and frequency at the load side for electrical utilization. Renewable energy sources are clean, nonpolluting, and available in abundance, and involve very little operational and maintenance cost. Wind and solar energy sources are the most promising un-conventional and renewable energy sources that have established themselves as viable alternatives for conversion into electrical energy

Introduction:

It is defined as the system in which the kinetic energy of the wind is converted to mechanical energy which in turn is used to generate electrical energy. The machines which are used to convert the kinetic energy of the wind into mechanical energy usually consist of sails, vanes or blades radiating from the hub or the central axis. The axis can be horizontal in most of the cases or vertical in some cases. When the wind hits the blade it rotates around the axis and the motion of the blades can be put to useful work .The devices which are used in wind conversion system are known as wind turbines because they convert the kinetic energy of the wind into the rotational energy and the device used for this is known as rotor. These wind turbines are connected to electrical generator to the required electrical energy and the connection of these two devices is known as aero generator. A transmission system is usually used to increase the speed of the rotor with the help of gear system. Wind mills are in the usage for more than dozen centuries for grinding grain and pumping water and now scientists are looking to generate electricity in large quantity with the help of wind turbines and interest in this field is increasing. Wind energy system can play an important role in reducing the energy crises of the world and can be used to produce efficient energy in remote areas. The wind speeds in India usually remain in between 5 to 20 km/hr. There are usually three factors

which determine the output of the electrical energy generated from the wind energy, wind speed, cross section of wind swept by rotor, the conversion efficiency of the rotor, transmission system and the generator. There is no device designed to extract all the wind energy because the wind will be brought to rest and this would prevent the passage of wind into the rotor. An efficient aero generator can only extract 60% of the total energy present in the wind into the mechanical energy. The available wind power is directly proportional to the square of the diameter of the horizontal axis of the wind turbine and the velocity of the wind speed as it passes though the rotor. The wind energy conversion system components are aero turbine, gearing, coupling and electrical generator.

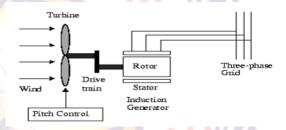


Fig.1: Wind Energy System

The main components of a wind turbine for electricity generation are the rotor, the transmission system, and the generator, and the yaw and control system.

Mast. Atharva Kasar Student, SYEE

Ethical Hacking...!



Ethical Hacking also known as penetration testing or intrusion testing. The ethical hacking process is explained, along with many of the challenges and opportunities in the field of ethical hacking.

Types of Ethical Hacking:

- 1) Black hat hackers
- 2) White hat hacker
- 3) Grey hat hacker

Advantages of ethical hacking:

- 1) Fightning agaist terrorism and national security breaches.
- 2) Having a computer system that prevents malicious hackers from gaining access.
- 3) Having adequate preventative measures in place to prevent security breaches...

Let we seeWhat is key Loggers: -keyloggers are a type of monitoring software designing to record keystrokes made by a user. One of the oldest forms of

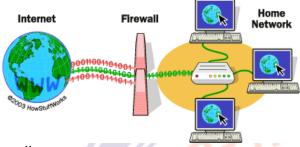


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cyber threat, these keystroke loggers record the information you type into a website or application and send to back to a third party...!



Firewalls:

Firewalls are also important concept in hacking. A firewall is a network security device that monitors incoming and outgoing network and permits or blocks data packets based on a set of security rules. Its purpose is to establish a barrier between your internal network and incoming traffic from external sources in order to block malicious traffic like viruses and hackers.



How to Ethical Hacking be done:

The term 'hacking' has very negative connotation, but that is only until the role of an ethical hacker is fully understood. Ethical hackers are the good guys of the hacking world, the one who wear the "white hat"

What are the stages of a career in Ethical Hacking:

Patience is a skill you need to cultivate if you want to embark on a career as an ethical hacker, you cannot expect to secure an exceptionally high-ranking job and earn a large salary right from the beginning, but there is immense potential to achieve both in a short span of time!!!!

Future Enhancement:

No ethical hacker can ensure the system security by using the same technique repeatedly.

Moe enhanced software should be used for optimum protection...!

Enhancement in technology is immense.

Ms. Snehal Mhaske Student, FYCM

Mathematics is the brain of Engineering and Technology

Technology (

Introduction

Technology has become an essential tool for doing mathematics in today's world. It can be used in a variety of ways to improve and enhance the teaching of mathematics. Technology can provide students with

opportunities to explore different representations of mathematical ideas and support them in making connections both within and outside of mathematics. The use of technology in teaching mathematics activities may be regarded as a new language of communication in the development of construction of knowledge. Our main goal, of all efforts in this regard, is the connection between mathematics and technology.

Importance of Mathematics in Technology

Advanced mathematics in particular, is crucial to the development of modern technology. Even mathematical knowledge, which enables the development of technology, would not be possible without advanced mathematics. For instance, analytical geometry made possible CAD, advanced program, and these programs have contributed such as the fact that the new engine in the car occupies much less space than the old car models, calculation cutting surfaces etc. Also, computers and networks are based on advanced mathematics for the preservation of records, coding information etc. We all use mathematical perfect results without which on-line banking; WebTV, the Internet, radio etc. would not be possible. Until the computer is programmed, it is just a box made of metal, glass, silicone etc. The program represents algorithms in the appropriate forms for the computer.

The Role of Technology in Mathematical Research

Technology needs and requirements affect the presentation of new problems for researchers in mathematics. It is sufficient to mention the example of geometry. It started as a practical tool for surveyors, however, when its importance was discovered, it began to develop as a separate branch. After a multi-year development, other branches have been developed, some of which are formed due to their secret beauty which later have been applied-the others have been proposed by users.



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Physical Sciences Engineering 14% 4% Mathematics, Computer Science & Applied Mathematics, nformation Sciences Statistics. & Biological Other Mathematical Operations 1% Research. Industrial

Spiral Interaction between Technology and Mathematical Education

The existence of mathematical software, such as Mathematical, Maple, Derivative, Mat lab etc. in the past three decades, it has started to change the way that math is explained. Mathematical software has made great progress, both in advanced mathematics as well as in the simplest. Mathematicians have contributed with their work in creating the technological tools that are used by professionals of other professions relevant to their work.

Prof. V. R. Patil LSH

Engineering 3%

RSM in News:



नाशिक : 'इंडिया बुक ऑफ रेकॉर्ड'मध्ये नोंद झालेल्या मयंक गितेसह शिक्षकवृंद.

'इंडिया बुक ऑफ रेकॉर्ड'मध्ये मयंक गिते याची नोंद

नाशिक: 'मिवप्र' संस्था संचितित राजषी शाहू महाराज पॉलिटेक्निक महाविद्यालयामध्ये माहिती-तंत्रज्ञान विभागातील तिसऱ्या वर्षात शिकत असणाऱ्या मयंक अनिल गिते या विद्यार्थ्याची 'इंडिया बुक ऑफ रेकॉर्ड'मध्ये नोंद झाली आहे. त्याने 'हॅलो वर्ल्ड' हा प्रोग्नाम सुमारे ९० कॉम्प्युटर भाषांमध्ये रूपांतरित केला आहे. त्याला प्रा. ए. पी. पाटील व विभागप्रमुख प्रा. व्ही. के. खेडकर यांचे मार्गदर्शन लाभले. मयंकचे मिवप्र संस्थेचे अध्यक्ष डॉ. तुषार शेवाळे, सरिचटणीस मंगंकचे मत्रप्र सभापती माणिक बोरस्ते, चिटणीस डॉ. सुनील ढिकले, शिक्षणाधिकारी डॉ. एन. एस. पाटील, प्राचार्य डॉ. डी. बी. उफाडे आर्दीनी कौतुक केले.

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महाराष्ट्र टाइम्स । नाशिक

। सोमवार, ८ मार्च २०२१

मयंक गितेचा सन्मान

नाशिक: 'मविप्र'च्या राजर्षी शाहू महाराज पॉलिटेक्निकमध्ये माहिती तंत्रज्ञान विभागात तिसऱ्या वर्षातील मयंक गिते या विद्यार्थ्यांने हॅलो वर्ल्ड हा कम्प्युटर प्रोग्राम तब्बल ९० संगणकीय भाषांमध्ये रूपांतरित केला आहे. या उपक्रमाची नोंद 'इंडिया बुक ऑफ रेकॉर्ड'मधील टेक्नॉलॉजी अँड इनोव्हेशन या विभागामध्ये करण्यात आली आहे.

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Happy International Women's Day,
Holi
and
World Water Day to All Readers
on the behalf of
Principal, Faculty, Supporting Staff
and Students.

Dr. D. B. Uphade Principal

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