GROOMMING BUDDING ENGINEERS

Government Polytechnic Jintur

IF Program

E-magazine

2022-2023

HOD DESK

Computer Engineering is a one of the emerging computing discipline. Now a day's Computers became essential work tools at every level of most organizations, and networked computer systems became the information backbone of organizations. Computer Engineering refers to undergraduate degree programs that prepare students to meet the computer technology needs of business, government, health care, schools, and other kinds of organizations

Computer Engineering is a new and rapidly growing field that started as a grassroots response to the practical, everyday needs of business and other organizations. Today, organizations of every kind are dependent on Information Technology. They need to have appropriate systems in place.

- **A.K.Rathod**

VISION

To create a skilled technicians in computer engineering for the industry and society

MISSION

M1. **To develop the logical abilities among the student.**

M2. **To solve the board –based problems of the computer engineering.**

M3. **TO inculcate professional and social ethical values among the students**

M4. **TO enhance leadership qualities to work in the multidisciplinary environment**

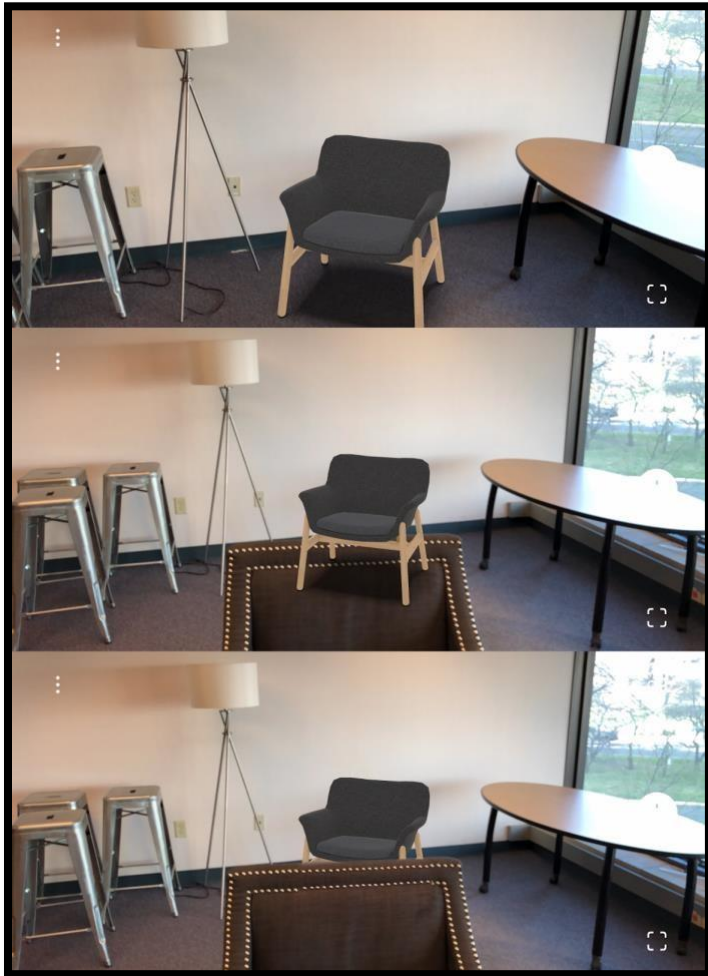**Augmented reality and virtual reality (AR/VR) And Quantum Computing**

What is Augmented Reality ?

Isolated applications of AR have been around for decades, but only recently have the technologies required to unleash its potential become available. At the core, AR transforms volumes of data and analytics into images or animations that are overlaid on the real world. Today most AR applications are delivered through mobile devices, but increasingly delivery will shift to hands-free wearables such as head-mounted displays or smart glasses. Though many people are familiar with simple AR entertainment applications, such as Snapchat filters and the game Pokémon Go, AR is being applied in far more consequential ways in both consumer and business-to business settings. For example, AR "heads-up" displays that put navigation, collision warning, and other information directly in drivers' line of sight are now available in dozens of car models.

Need for Augmented Reality ?

Augmented reality (AR) is the integration of virtual data produced in the computer environment into the real world in a way that we can perceive with our sense organs. The data produced in the virtual environment such as images, animations, 3D models, videos, graphics are transferred to the real world in real-time.

The bottom image is simulated (the real chair should hide the virtual one).

Augmented Reality Concept

Milgram and Kishino (1994) conceptualized the Virtual-Reality Continuum that takes into consideration four systems: real environment, augmented reality (AR), augmented virtuality and virtual environment. AR can be defined as a newer technological system in which virtual objects are added to the real world in real-time during the user's experience. Per Azuma et al.(2001) an AR system should:

- Combine real and virtual objects in a real environment.
- Run interactively and in real-time.
- Register real and virtual objects with each other.

Furthermore, even if the AR experiences could seem different from VRs, the quality of AR experience could be considered similarly. Indeed, like in VR, the feeling of

presence, level of realism, and the degree of reality represent the main features that can be considered the indicators of the quality of AR experiences. Higher the experience is perceived as realistic, and there is congruence between the user's expectation and the interaction inside the AR environments, higher would be the perception of "being there" physically, and at cognitive and emotional level.

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Augmented Reality Technologies

Technologically, the AR systems, however various, present three common components, such as a geospatial datum for the virtual object, like a visual marker, a surface to project virtual elements to the user, and an adequate processing power for graphics, animation, and merging of images, like a pc and a monitor. To run, an AR system must also include a camera able to track the user movement for merging the virtual objects, and a visual display, like glasses through which the user can see the virtual objects overlapping to the physical world. To date, two-display systems exist, a video see-through (VST) and an optical see-through (OST) AR systems. The first one, discloses virtual objects to the user by capturing the real objects/scenes with a camera and overlaying virtual objects, projecting them on a video or a monitor, while the second one, merges the virtual object on a transparent surface, like glasses, through the user see the added elements. The main difference between the two systems is the latency: an OST system could require more time to display the virtual objects than a VST system,

generating a time lag between user's action and performance and the detection of them by the system.

Augmented Reality Applications

Although AR is a more recent technology than VR, it has been investigated and used in several research areas such as architecture (, maintenance entertainment education, medicine, and psychological treatments. More in detail, in education several AR applications have been developed in the last few years showing the positive effects of this technology in supporting learning, such as an increased-on content understanding and memory preservation, as well as on learning motivation For example developed a AR application on electromagnetism concepts' learning, in which students could use AR batteries, magnets, cables on real superficies, and the system gave a real-time feedback to students about the correctness of the performance, improving in this way the academic success and motivation .Deeply, AR system allows the possibility to learn visualizing and acting on composite phenomena that traditionally students study theoretically, without the possibility to see and test in real world. As well in psychological health, the number of research about AR is increasing, showing its efficacy above all in the treatment of psychological disorder. For example, in the treatment of anxiety disorders, like phobias, AR exposure therapy (ARET) showed its efficacy in one-session treatment, maintaining the positive impact in a followup at 1 or 3 month after. As VRET, ARET provides a safety and an ecological environment where any kind of stimulus is possible, allowing to keep control over the situation experienced by the patients, gradually generating situations of fear or stress.

Indeed, in situations of fear, like the phobias for small animals, AR applications allow, in accordance with the patient's anxiety, to gradually expose patient to fear animals, adding new animals during the session or enlarging their or increasing the speed. The various studies showed that AR is able, at the beginning of the session, to activate patient's anxiety, for reducing after 1 h of exposition. After the session, patients even more than to better manage animal's fear and anxiety, ware able to approach, interact, and kill real feared animals.

-Article by:-Atharva Joshi

Enrollment no:- 2100940033

Virtual Reality

Virtual reality (VR) is a powerful and interactive technology that changes our life unlike any other. Virtual reality, which can also be termed as immersive multimedia, is the art of simulating a physical presence for the audience in places both real and imaginary. It usually involves two senses namely sight and sound. The key property that distinguished VR from all previous media types is "presence". Presence is the psychological sense of "being there", of actually being immersed in and surrounded by in the environment. This discussion is an attempt to give an overview of the current state of environment-related VR, with an emphasis on live VR experiences. The technology, art and business of VR are evolving rapidly. The various fields of VR are discussed to get a better view about it. The next development based on virtual reality is augmented reality.

Types of virtual reality

1. Non - Immersive Virtual reality :- its experience are overlooked as virtual reality category .

2. Semi - Immersive Virtual reality :- it provider partial virtual Environment.

3. Fully - Immersive Virtual reality :- it is most realistic.
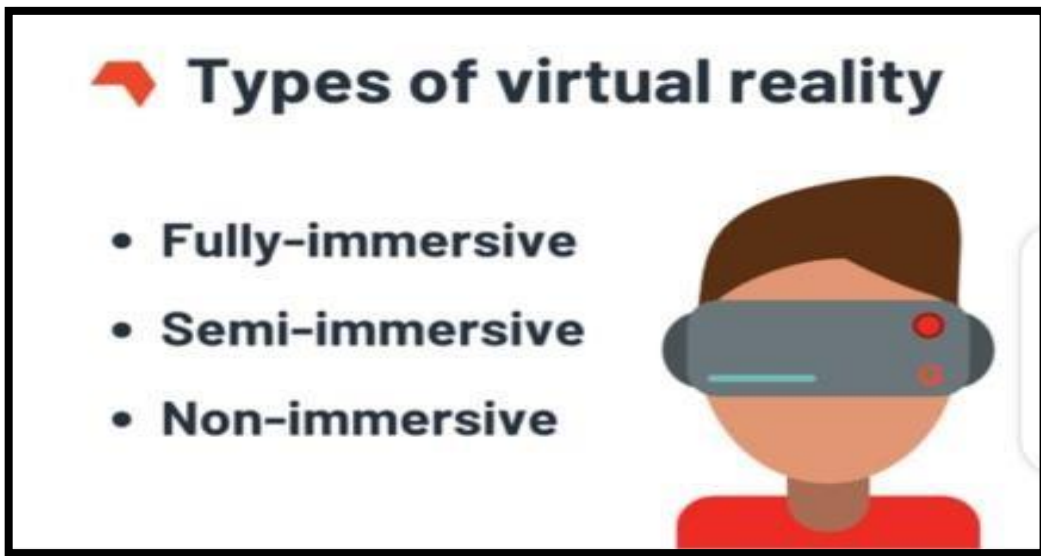
No of virtual reality devices sold in 2017

The number of VR headsets out there may not be reaching the stratospheric estimates that were first predicted, but they're still growing, at least. According to a report from Canalys, in Q3 of 2017, Sony shipped 490,000 PlayStation VR headsets, Oculus shipped 210,000 Rift headsets and HTC shipped 160,000 Vive units. The research agency has not released data publicly for previous quarters, but says this is the first time that high-end headset sales have moved past one million units in a single quarter. While the high-end VR headsets are most easily categorized by their ability to play more graphically intense titles, their ability to integrate positional tracking so users can move about freely is a feature coming to more low-end all-in-one headsets moving forward.

Article by:-Durga More & Parmeshwar Bhandekari

Quantum Computing

What is Quantum Computing ?

Quantum computing is a rapidly-emerging technology that harnesses the laws of quantum mechanics to solve problems too complex for classical computers.


Why Do We Need Quantum Computing ?

For some problems, supercomputers aren't that super.

When scientists and engineers encounter difficult problems, they turn to supercomputers. These are very large classical computers, often with thousands of classical CPU and GPU cores. However, even supercomputers struggle to solve certain kinds of problems.

If a supercomputer gets stumped, that's probably because the big classical machine was asked to solve a problem with a high degree of complexity. When classical computers fail, it's often due to complexity Complex problems are problems with lots of variables interacting in complicated ways. Modeling the behavior of individual atoms in a molecule is a complex problem, because of all the different electrons interacting with one another. Sorting out the ideal routes for a few hundred tankers in a global shipping network is complex too.

The present: quantum computer revolution

Over the last decades, quantum technology has been an exciting toy for scientists but it still has to demonstrate its usefulness in practice. Frankly speaking, industrial interest and long-term investment in quantum hardware and software development can only be achieved if the overall benefits outweigh the immense costs of building and
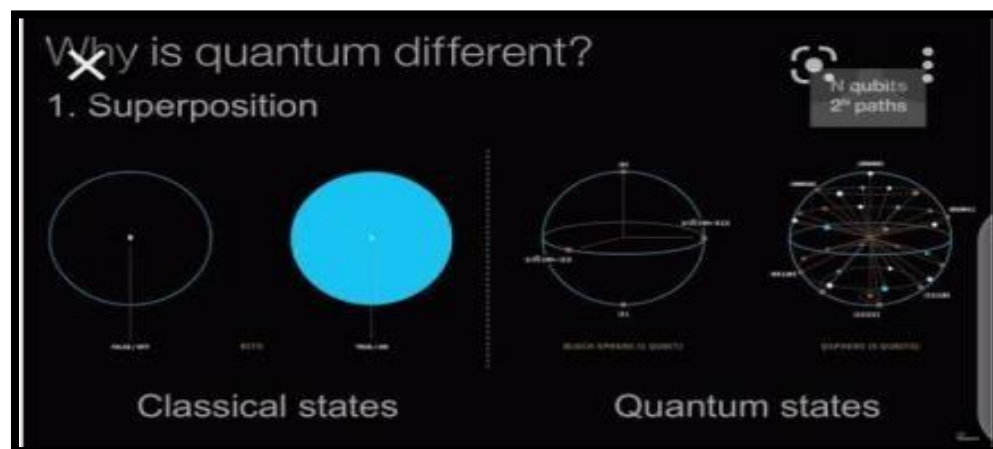
Operating quantum computers and their infrastructure as well as developing quantum algorithms and, finally, applications for realistic problem sizes. It is not a coincidence that the strongest interest in building practically usable quantum computers is largely motivated by their potential to break public-key cryptography schemes such as the widely used RSA scheme. The theoretical superiority of quantum computers in this particular discipline is based on Shor's quantum algorithm for the efficient factorization of large integer numbers into prime factors in

polynomial time, whereas the most efficient classical algorithms require sub-exponential time. "Complexity and analysis of algorithms" section gives a brief overview of the different complexity classes. Variants of the Rivets–Shamir–Adelman (RSA) encryption are used everywhere, for instance, for making secure connections to the Internet, sending text messages between mobile phones and email programmers and for signing contracts and official documents digitally. It is clear that the ability to read and possibly modify encrypted data and communication is most tempting for intelligence services and hackers alike, thus justifying research on quantum computers and algorithms for this purpose alone. It is, however, not completely unthinkable that quantum computers, like personal computers since the 1980s, will become available for the masses once the technologies for manufacturing and operating quantum hardware has matured and the total cost of ownership have reached an economically acceptable level. That said, we believe that the most probable scenario will be quantum computing as a service as it is already offered by IBM through its "Quantum Experience" service.

-Article by:- Varad Patel & shubham Shinde

VOICE TECHONOLOGY

        Voice technology is commonly associated with picking. As hands-free, eyes-free technology it's equally valuable for put-away, replenishing, cycle counting, inspection, and many other applications. None of this changes moving forward. However, voice is in a unique position unlike any other tool or system within the four walls. This is a byproduct of the rising complexity in supply chain. As challenges push operations harder, businesses are considering new tools and strategies to keep up. In response, we're seeing businesses reinvent voice applications to go beyond its tried-and-true worker efficiency and productivity benefits. Here, voice acts as a bridge, connecting warehouse systems together for more holistic, integrated solutions creating more operational visibility and new opportunities to work smarter.

Voice Technology Puts People First

        We've covered how voice integrates with and benefits modern technologies. But, how does modern technology benefit voice? Voice systems are already known for reducing training time. By embedding AI into voice systems, the time to pair devices to workers is virtually eliminated. These "pick-up-and-go" solutions work without voice training exercises. This greatly reduces training time in general – improving the productivity and value of headcount.

From an employee satisfaction and retention standpoint, voice picking solutions help give employees a comfortable, safe, and ergonomic way to do their work. When you can lift a box safely with all of your fingers instead of trying to lift a box and balance a hand scanner all at once, you reduce risk of injuries.

A multi-lingual voice system provides worker benefits—it removes a language barrier and helps workers do their job however they feel most comfortable. Also, voice systems delivered through the Android operating system give workers valuable familiarity with their devices.

Gamification is another interesting avenue. When voice enables friendly competition, it gives workers a little extra incentive and even enjoyment out of their job. As workers become harder to find and replace, it's important to add these perks to make your operations stand out from the other warehouses.

<div align="right">Article By: Atharv Joshi</div>