Faculty of Information and Communication Technology (FICT)

Introduction to emerging technology (CSC107)

Group one

(1)a. Discus the underlisted Emerging Technologies on how it could be shaping the future of you and your business

i. Chatbots
ii. Virtual, Augmented & Mixed Reality
iii. Blockchain. The blockchain frenzy is real
iv. Ephemeral Apps and
v. Artificial Intelligence

b. Briefly discussed security requirements at a different layer of IoT?

c. What are the most frequently raised challenges that of IoT has been facing?

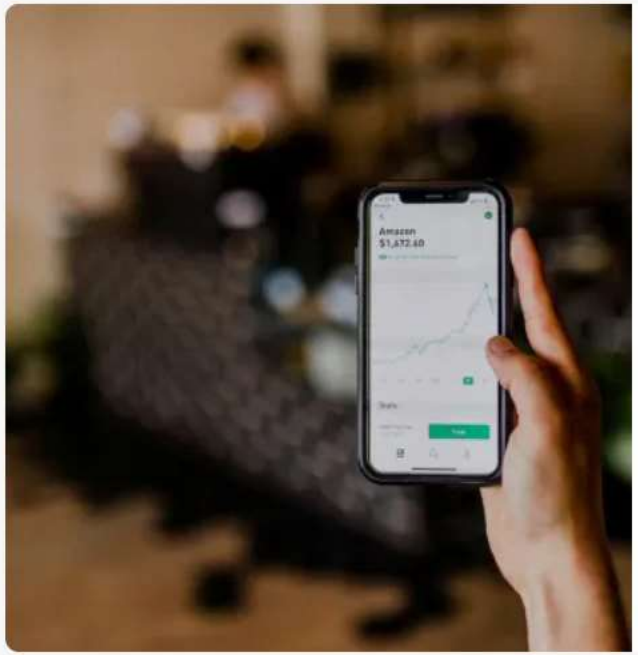
chatbot

- **Chatbots are virtual advisors, consultants or assistants whose task is to talk to an Internet user in real-time. However, they conduct conversations without human intervention. In reality, they are computer programs equipped with special algorithms that enable conversation and activities related to customers needs.**

Practical example of chat bot

optimize the checkout process, one... **read more**

Jacquelyn Dunham 11 minutes Feb 9, 2024



Top Finance Chatbots for Banks and Personal Finance

Infusing convenience and technology into personal finance and banking is no longer an added benefit. It's now a requirement to remain competitive with other institutions leveraging advanced technology. A recent study found that 48% of bank customers manage their accounts using... **read more**

Jacquelyn Dunham 9 minutes Feb 7, 2024

chatbot

- **How chat bot is improving our business**
- Faster Customer Service
- It is no secret that chatbots provide faster replies as well as a quicker resolution to the customer.
- This reduces the waiting delay, and the customer hence receives quicker service, thus improving his overall experience.
- Higher Customer Satisfaction
- With quick resolutions to queries, chatbots have recorded a higher satisfaction of service when interacting with customers.
- Reduction in Costs of Human Resources
- Handling individual customer queries on a large scale requires huge manpower, and that brings its costs along with.

(ii) Virtual, Augmented & Mixed Reality

Virtual Reality

VR is the most widely known of these technologies. It is fully immersive, which tricks your senses into thinking you're in a different environment or world apart from the real world. Using a head-mounted display (HMD) or experience a computer-generated world of imagery and sounds in which you can manipulate objects and move around using haptic controllers while tethered to a console or PC.


SLOWTIME
x1
PHYSICAL INTERACTION
TEST
CHAMBER
[REDACTED]

(ii) Virtual, Augmented & Mixed Reality

Augmented reality

Augmented reality (AR) is a technology that allows the superposition of digital elements into the real-world environment. In the AR experience, you can see a composite view of physical or real-world elements and digital elements. While some AR experiences may offer a certain degree of interaction between physical and virtual elements, typically, there is limited to no direct interaction between the digital and physical world components.

(ii) Virtual, Augmented & Mixed Reality

Mixed reality

Mixed reality (MR) is a technology that allows not only the superposition of digital elements into the real-world environment but also their interaction. In the MR experience, the user can see and interact with both the digital elements and the physical ones. Therefore, MR experiences get input from the environment and will change according to it.

Mixed Reality |

How Virtual, Augmented & Mixed Reality is changing our future

Improving Training and Education

The use of Augmented Reality (AR) ,Virtual Reality(VR), and mixed reality in training and education has the potential to revolutionize the way we learn. Wearable devices such as AR-powered smart glasses, contacts, and headsets provide an immersive and interactive learning experience, allowing students to visualize and fully immerse themselves in the subject. This not only improves the learning experience but also reduces the cost of learning materials and makes them more easily accessible to everyone. This is the future of mobile learning, and you can expect it to gain more popularity in the near future.

- **The entertainment industry is recognizing the potential of Augmented Reality (AR) as a powerful marketing tool. With AR, entertainment brands can seamlessly blend their content with the characters and experiences that audiences love. Many entertainment apps, such as Snapchat, Google Lens, and Augment, are already using AR technology to enhance the entertainment experience. As AR technology continues to evolve, it's expected that you will see more and more entertainment companies leveraging its capabilities to engage audiences in new and exciting ways.**

Blockchain

- Blockchain: Peer-to-peer transactions without middlemen are made possible by blockchain technology, which offers transparent and safe decentralized ledgers. Numerous industries could be affected, including voting systems, healthcare, finance, and supply chain management. Blockchain can cut costs, simplify procedures, and open the door to new business models by boosting trust, decreasing fraud, and increasing transparency.

How Blockchain is changing our business

1.Transparency: Every transaction recorded on a blockchain is transparent and immutable, meaning once recorded, it cannot be altered or deleted. This transparency builds trust among participants and allows for more efficient auditing processes.

2.Smart Contracts: Smart contracts are self-executing contracts with the terms of the agreement directly written into code. They automatically enforce and execute the terms of an agreement when predefined conditions are met. This reduces the need for intermediaries and streamlines business processes.

Ephemeral Apps

- Ephemeral Apps: These apps are becoming more and more well-liked since they put an emphasis on data protection and privacy by automatically erasing content after a set amount of time. These applications give users more control over their online presence and can be used for private messaging, transient advertising campaigns, or content that must be viewed quickly. Ephemeral apps are a useful tool for businesses to engage clients while lowering privacy threats.

- **Information governance: Data storage and records preservation/management are reduced by ephemeral messaging.**

- **Legal compliance: Encryption and automatic deletion of personal data help reduce exposure if a data breach occurs.**

- **Data security: Even if a mobile device is lost, the automatic deletion of data will likely protect against hackers.**

Artificial Intelligence

- **Artificial intelligence (AI)**, the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings. The term is frequently applied to the project of developing systems endowed with the intellectual processes characteristic of humans, such as the ability to reason, discover meaning, generalize, or learn from past experience.

How AI is transforming our business

Companies are using AI technology to streamline their daily processes, analyze upcoming trends, forecast growth, and predict outcomes. For instance, anytime a customer places an item into their shopping cart on the websites of some major retailers, they are immediately given an additional suggested item to purchase based on an advanced algorithm.

security requirements at a different layer of IoT

- (i)Device Layer: To stop malware infections, tampering, and unwanted access at the device level, secure boot, firmware upgrades, and tamper-resistant hardware are crucial.
- (ii) Communication Layer: Segmenting IoT networks to isolate critical devices and services from less secure or untrusted parts of the network, reducing the attack surface.
- (iii) Cloud/Server Layer: Intrusion Detection and Prevention is Deploying intrusion detection systems (IDS) and intrusion prevention systems (IPS) to monitor network traffic, detect suspicious activities, and block malicious attempts to access or compromise cloud-based services.
- (iv) Application Layer: Security Testing is Conducting regular security testing (e.g., penetration testing, code reviews, vulnerability scanning) to identify and remediate security weaknesses in IoT applications and interfaces.

The most frequently raised challenges that of IoT has been facing.

- **(i) Device Compatibility**: IoT systems often use diverse protocols and technologies, leading to complex configurations. Ensuring seamless interoperability between devices remains a challenge
- (ii) **Vulnerabilities**: IoT devices are often susceptible to cyber attacks due to inherent issues. Limited power supply and the need for long battery life hinder the implementation of robust security features like encryption and authentication.
- **Bandwidth Strain**: As the number of connected devices grows, network bandwidth becomes a bottleneck. Efficient data transmission and management are critical.

End of presentation