Maratha Vidya Prasarak Samaj's
Karmaveer Adv. BaburaoGanapatrao Thakare
College Of Engineering
Nashik-13.
(NAAC ACCREDITED INSTITUTE WITH 'A++' GRADE)

DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION ENGG.

Departmental TeChronicle **Month: -September 2023**

Vol. - 05, Issue - 3

Department Vision:-

To be recognized as an excellent department offering competent technical education to create competent electronics & telecommunication engineers for the benefit of the common masses.

Department Mission:-

Committed to serve the needs of society through innovative teaching learning processes, promoting industry- institute interaction to provide competent and cultured electronics and telecommunication engineers.

Program Educational Objectives:-

1. *To impart state of art technical education in the Electronics & Telecommunication Engineering.*
2. *To promote society beneficial projects and activities.*
3. *To develop soft skill, team work, professional ethics and multidisciplinary approach for the carrier enhancement.*
4. *To bridge the gap between Industry-Institute through collaboration with Industries, Institutions and Universities.*
5. *To provide suitable infrastructure and facilities in tuned with advancing technological evaluation.*

Greeting,

Department of Electronics and Telecommunication Engineering is celebrating Engineers Day by unveiling technical newsletter "TeChronicle" VOL5, ISSUE-3 on 15th September 2023. The Government of India decided to mark the birth anniversary of Mokshagundam Visvesvaraya to remember his exceptional contributions in the field of Engineering.

PROMPT ENGINEERING

[Mr. Tanmay Dhamane (S.E. E&TC)]

What is prompt engineering? why we should learn it. When you ask questions or give instructions to AI tools like chat-gpt to get answer, that question is known as prompt, and the study of asking questions to AI tool is known as prompt engineering. Prompt engineering is important because you can take its help to ask good questions to AI and that will help you in your daily life to save time, to make your daily routine, to improve your skills, to learn new things, to give more time to your side hustle. The more specific prompt you write, more specific and satisfying answer you get. The goal is to understand the thought process behind using AI to your advantage. I want you to understand that once you master the Art of Prompting, you can apply your knowledge to any AI Tool in this world. **But** before we learn about how prompt works, we should know how it finds the information to answer your question. We use prompt on chat gpt, bard, bing these are **AI chat box** .

Chat GPT is made to handle sequential data, like text, and is trained on enormous amounts of textual data. Let's take ***chat gpt*** and understand how it works:- Chat-GPT is based on the GPT (Generative Pre-trained Transformer) architecture.

It's trained on a massive dataset of text from the internet and fine-tuned for specific tasks. When you send a query, it processes the input, understands the context, generates text based on that context, and sends back a response. It uses Python, deep learning frameworks like PyTorch and TensorFlow, and cloud services for development and deployment.
Chat GPT and similar AI models developed by OpenAI typically run on their own dedicated servers and infrastructure. Chat GPT is built using a combination of programming languages and technologies. The primary language used for developing the underlying model and the training infrastructure is Python. Now we come again to prompt engineering.

Prompts: Weekly routine for improving your skills. This prompt asks an experienced AI mentor in a specific profession to provide a weekly routine, with a focus on a specific topic. It also requests uncommon advice and underrated resources in the field. The subject can be tailored to any profession
EX.1] A student seeking a weekly routine from a tutor/academic advisor to improve their study habits and academic performance, such as time management and exam preparation. Prompt anatomy: ***breakdown this prompt**

ASSIGN A ROLE: you’re a senior mentor.
DEFINE THE TASK: Give me weekly routine for improve my study and learning as E&TC engineer
SET CONTRAINS: give some uncommon advice and sources.

Uses:

1. to set a good routine for student studying in collage
2. to a person who is learning some skill and want to improve in it
3. Time management

References

https://www.zdnet.com/article/what-is-chatgpt-and-why-does-it-matter-heres-everything-you-need-to-know/

https://medium.com/@colinbaird_51123/a-beginners-guide-to-chatgpt-understanding-what-it-is-why-it-matters-and-when-where-to-use-it-5c80b8c4ef6b

ADITYA L1

[Sangram Tathe(E&TC)]

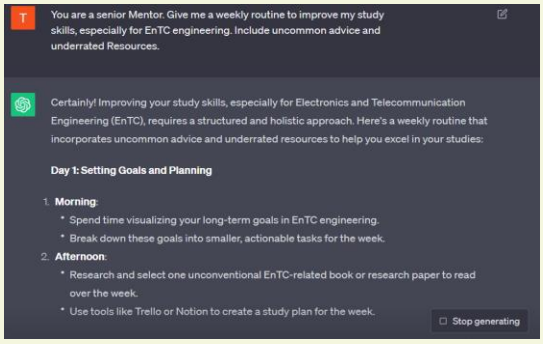
Aditya L1 is India's first space mission to study the Sun, placed in a halo orbit around the Sun-Earth L1 point, approximately 1.5 million km from Earth. This unique orbit allows continuous observation of the Sun, avoiding eclipses. The spacecraft carries seven payloads for observing various layers of the Sun and space weather. Four payloads directly view the Sun, while three conduct in-situ studies at L1, providing insights into solar dynamics and their effects on interplanetary space. These payloads aim to understand coronal heating, coronal mass ejections, flares, space weather dynamics, and particle-field propagation, contributing crucial data for solar research.

The Aditya-L1 is India's first dedicated solar mission, primarily focused on studying the Sun. Here's some information about its history, researchers, and overview: History:

The Aditya-L1 mission was initiated by the Indian Space Research Organization (ISRO) in 2008.The project was named after the Hindu solar deity, Aditya. Its primary goal is to understand various aspects of the Sun's behavior, which is crucial for space weather prediction.

Researchers and Collaborations:

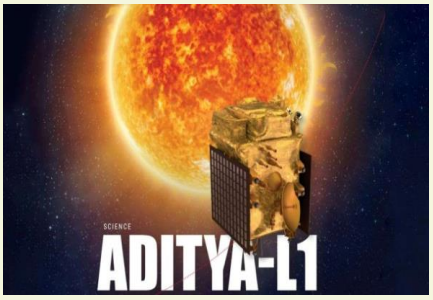
The mission is primarily led by ISRO, with collaboration from several Indian research institutions, including the Tata Institute of Fundamental Research (TIFR) and the Indian Regen Institute of Astrophysics (IIA).



Aditya-L1 is India's pioneering space mission designed to study the Sun from the advantageous vantage point of the L1 Lagrange point,

approximately 1.5 million km from Earth. The spacecraft is equipped with seven specialized payloads to observe various aspects of the Sun, from the photosphere to the corona, using electromagnetic, particle, and magnetic field detectors. Its key science objectives include: Studying Solar Upper Atmospheric Dynamics: Aditya-L1 aims to investigate the dynamics of the solar upper atmosphere, specifically the chromosphere and corona.

Exploring Coronal Heating and Plasma Physics: The mission seeks to understand the processes responsible for coronal heating, the behavior of partially ionized plasma, and the initiation of coronal mass ejections (CMEs) and solar flares.



References

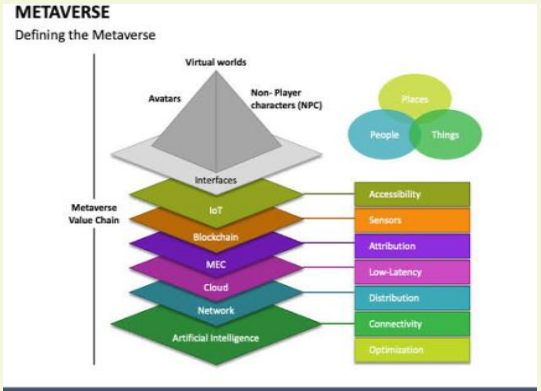
https://en.wikipedia.org/

https://www.isro.gov.in/Aditya_L1.html

Metaverse An Unique Experience

[Mr.Sanika Shinde(S.E. E&TC)]

Metaverse is a decentralized virtual world platform designed to provide a new type of interactive and immersive digital experience. It utilizes blockchain technology and digital assets to create an ever-evolving universe of virtual worlds, where users can create, explore, and interact with one another. Metaverse allows users to build their own avatars, create digital content, hold digital assets, and communicate with other users. With its



combination of virtual reality, blockchain technology, and user generated content, Metaverse promises to revolutionize the way people interact in the digital space.

Metaverse Industry in India: In recent years, the Metaverse industry in India has grown significantly. According to a report by NASSCOM, the Indian gaming industry is expected to reach $1.1 billion by 2021 and is expected to continue growing at a steady pace in the coming years. Furthermore, the increasing popularity of virtual reality devices has also driven growth in the Metaverse industry in India. The VR and AR market in India is expected to reach $1.38 billion by 2025, making it one of the fastest-growing markets in the world. One of the primary drivers of growth in the Metaverse industry in India is the rise of startups that are developing innovative solutions for this space. There are several Indian startups that are working on creating virtual worlds and immersive experiences for users. These startups are attracting significant investment from venture capital firms, which are looking to tap into the growth potential of this market.

It is clear that metaverse is a craze that has been spreading all over the world at a rapid rate. This trend has been embraced by people of all ages, genders, cultures and backgrounds. It has become a way of connecting people with each other, and its

influence has been felt across many different platforms. It is a testament to the power of social media and the internet in bringing people together that a trend like metaverse has become so popular in such a short period of time.

The Algorithm and Hardware Behind VR

[Mr.Piyush S.Jagtap(E&TC)]

Gaming Introduction: Virtual Reality (VR) gaming has revolutionized the way we experience digital entertainment. It offers immersive and interactive experiences that transport users into virtual worlds. Behind the scenes, a combination of sophisticated algorithms and powerful hardware work together to deliver the seamless VR experience. In this blog, we will delve into the algorithms and hardware components used in VR gaming and their crucial role in enabling immersive gameplay.

Hardware Components:

Head-Mounted Display (HMD): The HMD is at the heart of the VR gaming experience. It typically consists of two high-resolution screens, one for each eye, to create a stereoscopic effect. These displays need to have fast response times and low latency to provide a smooth and responsive experience.

Graphics Processing Unit (GPU): The GPU plays a critical role in rendering realistic and detailed virtual environments. It handles the complex calculations required to generate and display high-quality graphics at high frame rates. Dedicated VR-ready GPUs are designed to handle the demanding requirements of VR gaming to minimize latency and maintain a consistent frame rate for smooth gameplay.

Tracking Systems: For a truly immersive experience, VR systems use various tracking technologies to monitor the movement of the user's head and hands. This allows the system to update the visual display in real-time, providing an accurate representation of the user's movements within the virtual environment. Tracking systems may rely on sensors, cameras, or infrared light to capture movement data accurately.

Algorithms:

Positional Tracking: Accurate tracking of the user's head position and orientation is crucial for creating a sense of presence in the virtual world. Algorithms use data from the tracking systems to calculate the position and orientation of the user's head in real-time. These algorithms employ techniques such as sensor fusion, which combines data from multiple sensors to improve accuracy and reduce latency.

Rendering Optimizations: Rendering realistic graphics at a high frame rate is a daunting challenge for VR gaming. To achieve this, algorithms are used to optimize the rendering process, reducing the load on the GPU while maintaining visual quality. Techniques like foveated rendering, which concentrates rendering resources on the user's central vision.

Motion Smoothing: Motion-to-photon latency is a critical factor in VR gaming, as even minor delays can cause motion sickness. Algorithms for motion smoothing utilize predictive techniques to slightly adjust the displayed frame based on the user's head movements. By predicting the user's head position, these algorithms compensate for latency, ensuring a smooth experience.

Reference

https://en.wikipedia.org/wiki/Virtual_reality

Website: www.kbtcoe.org

Email Id: techronicle.etc@gmail.com