

Assignment 5 MIS-703

QNO1

1) Garry Kasparov:-

Russian chess grandmaster and former world champion Garry Kasparov is regarded as one of the game's all time greats. He is well-known for his mastery a strategy and his legendary chess battles, notably his infamous loss to **IBM**-computer Deep Blue in **1997**.

2) Deep Blue:-

In a widely publicized encounter, Deep Blue, an **IBM** computer, defeated Garry Kasparov, in **1997**, earning in worldwide recognition. **Deep Blue's** triumph served as a key turning point in the development of man-machine competition and illustrated the potential of **brute-force** computing and sophisticated algorithm in field of **AI**.

3) Alan Turing:-

British mathematician, logician and computer scientist Alan Turing was instrumental in the creation of contemporary computing and artificial intelligence. He made a substantial contribution to the German Enigma code break during World War **II**, which tremendously benefited the Allied forces.

4. John McCarthy:-

American computer scientist and pioneer of **AI** John McCarthy. He is recognized for the creation of term

"Artificial Intelligence" and, for his fundamental contributions to the field, which include the creation of the **LISP** programming language, which was fundamental to the field's development.

5. **Geoffrey Hinton:**

British-canadian computer scientist Geoffrey Hinton is renowned for his groundbreaking work in deep learning, and neural networks. He is frequently referred to as the "Godfather of Deep Learning" and has significantly advanced artificial intelligence. His work has had a significant influence on machine learning and contributed to innovation in computer vision.

6. **Go:-**

Go, commonly referred to as Baduk or Weiqi, is a strategic board game that dates back more than 2500 years to ancient China.

7. **Lee Sedol:-**

Lee Sedol, a retired South Korean professional Go player, is renowned across the world for his extraordinary talent in the classic board. One of the famous **Go** players in history, according to many. Lee Sedol's contributions to the game of Go and his participation in AlphaGo and AI history.

8. **DeepMind ALPHAGO:-**

A division of Alphabet Inc. DeepMind created the artificial intelligence program ALPHAGO. The

ancient board game of **Go**, which is regarded as one of the most complex and difficult for **AI** to understand because to the large number of possible moves, is where it achieved its most notable success.

9. Move 37 (AlphaGo and Lee Sedol):-

Move 37 refers to a crucial and well-known move made by DeepMind's artificial intelligence program AlphaGo in its historic encounter against Lee Sedol, the reigning world champion Go player in **2016**. Move 37 was a startling and unorthodox move that showed AlphaGo's capacity for strategic and creative thought, going beyond typical human Go tactics.

10. Atlas by Boston Dynamics:-

A well-known robotics company, Boston Dynamics, created the humanoid robot Atlas. Dynamic mobility, agility, and object manipulation are just a few of the functions it is made for. The development of adaptable robots that can help in a variety of industries, from industrial automation to search and rescue, has advanced significantly.

11. Charles Babbage:-

A British mathematician and inventor from the **19th** century Charles Babbage is regarded as the "father of computer". The Analytical Engine, a mechanical, all purpose computer that served as forerunner to contemporary computers, was

created by him.

12- Ada Lovelace:-

English mathematician and author Ada Lovelace was born Augusta Ada Byron in 19th century. Her work on Charles Babbage's Analytical Engine, where she produced what is regarded as very first computer program, is what made her most famous. Her writings lay the foundation for current computer programming.

13- Mars Rovers:-

Robotic spacecraft known as Mars Rovers are intended to explore and research the planet Mars. We have made significant progress in our understanding of the Martian environment, geology, and hunt for indications of past or present life thanks to NASA's Mars Rovers including Sojourner, Spirit, Opportunity, Curiosity.

14- Aristotle:-

Greek philosopher Aristotle flourished in the period 384-322 BCE. In addition to politics, biology, philosophy and logic, he made important contributions to many other disciplines. Aristotle's writings, such as Nicomachean Ethics and politics have had a significant impact on Western philosophy and ideas. His writings are still studied and discussed in philosophy and academia today.

QNo2:-

What is the reason for two AI winters?

The term "AI winter" refers to periods of reduced interest, funding and progress in the field of artificial intelligence (AI). There have been two notable AI winters in the history of 'AI' research. The reasons for these two AI winters are complex and multifaceted:

★ First AI winter:- (1970s-1980s)

→ Overly Optimistic Expectation:-

In the early days of AI research, there was ~~signi~~ significant optimism about the potential of AI to solve complex problems.

→ Limited Data:-

In 1970s and 1980s, there was limited access to vast datasets that are available today, which hindered progress.

→ Funding Cuts:-

As expectations of AI's potential did not match the progress being made, funding for AI research began to dwindle.

★ Second AI winters:- (late 1980s-1990s)

→ Unrealistic Hype:-

Once again, there was a surge of unrealistic expectations about AI in the mid-1980s, driven in part by success of expert system.

→ Market Saturation:-

Some AI companies saturated the market with products

that were not sufficiently mature, leading to skepticism about the value of AI technologies.

Recovery:-

The recovery from these AI winters came about as AI researchers and practitioners developed more realistic goals, made incremental progress, and eventually benefited from advances in computing power and availability of larger data sets.

Q No 3:-

What are the challenges related to AI?

Artificial Intelligence presents numerous opportunities, but it also comes with several challenges.

Here are some key challenges related to AI.

→ Bias and Fairness:-

AI systems can inherit biases from their training data, which can lead to discriminatory outcomes particularly against under-represented groups.

→ Privacy Concerns:-

AI systems often require access to large amounts of data, which can raise privacy concerns.

→ Data quality and Availability:-

AI models heavily rely on high-quality data for training. Obtaining, cleaning and maintaining large data sets can be expensive and challenge.

→ Security Risks:-

AI can be vulnerable to adversarial attacks, where malicious actors manipulate input data to deceive AI systems. Ensuring the security of AI applications and protecting against these attacks is challenging.

→ Robustness and Reliability:-

AI systems should perform reliably in various conditions and not be overly sensitive to changes in input data. Ensuring the robustness of AI models is crucial especially in safe-critical applications like autonomous vehicles.

→ AI in Health care:-

Integrating AI into healthcare systems poses unique challenges related to patient privacy, regulatory compliance, and potential for misdiagnosis or bias in medical decision-making.

→ AI in Education:-

Implementing AI in education requires addressing issues related to student privacy, personalized learning and ensuring that technology complements, rather than replaces human educators.

→ Global Competition:-

The race to develop AI technologies has become a global competition, raising concerns about technological and geopolitical tensions.

Q No 4:-

Defining AI paradigm to solve a real world complex problem.

The term 'AI paradigm' refers to a specific approach or methodology for applying artificial Intelligence techniques to solve real world complex problems. Here are a general outline of an AI paradigm to address such problems:-

→ Problem understanding and Defination:-

Begin by thoroughly understanding the complex real-world problem you intend to solve. Define the problem's scope, objectives, constraints and specific outcomes you aim to achieve.

→ Continuous learning:-

Stay updated with latest AI research and technologies to adapt and improve the AI solution as needed.

→ User Interaction and Feedback:-

Involve end-users and stakeholders throughout the process to gather feedback and refine AI system's usability and effectiveness.

→ Scalability and Efficiency:-

Ensure that AI users can scale to handle larger datasets or higher workloads efficiently. Optimize for computational resources and cost-effectiveness.

→ Validation and Testing:-

Split the data into training, validation and test sets to assess the model's generalization capabilities. Use cross-validation techniques to ensure robustness.