

GenAI Assignment 1

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Q1) Why do you think Humans are important? Why Humans? Why do you think humans can think critically and make judgements which AI can't?

I think humans are important because of their ability to experience emotions, to be able to express them fully, and connect deeply on personal levels. The fact that humans are able to think critically and creatively, and make a judgement based on actual raw emotions and experiences is something which humans can do, and which AI lacks.

Q2) What is AGI? What AGI can achieve that AI can't achieve?

AGI(artificial general intelligence) is a type of AI with human-like intelligence that is capable of understanding, learning and solving problems across any domain without being pre-programmed. Unlike the normal AI which excels at specific tasks, AGI can think, adapt and generalize knowledge, enabling it to match human cognitive abilities. It is multipurpose, which means it can do multiple tasks with multiple modality at the same time.

Q3) Why is AGI important and why will it be the next step?

AGI is important because I believe it represents the next big step in the AI evolution, because it can enable machines to think, learn and adapt like humans. With AGI, it has the potential to revolutionize fields like healthcare, education and science by solving complex problems that are beyond human limitations.

Q4) What is ASI?

ASI(artificial super intelligence) as the name suggests refers to the AI that surpasses human intelligence in all aspects, including creativity, problem-solving and decision making. It is basically capable of outperforming humans in every domain and has the potential like AGI to revolutionise science, healthcare and technology.

Q5) What is your definition of generative AI?

My definition of generative AI, as the name suggests, is a type of artificial intelligence that generates new content such as for example images, audio, text by learning patterns and structures from the already existing data. An example of generative AI is for example chatbots or content creation that generates new content by being trained and learning patterns from data that is already available.

Q6) What are Transformers?

Transformers are a type of deep learning model that are designed for processing sequential data such as text, audio or images. Transformers use mechanisms called self-attention and encoding to understand the relationship between elements in a sequence, which enable for tasks like language translation, text generation and analysis of images.

Q7) What is attention?

Attention is a mechanism that allows the models to focus only on the most relevant parts of the input data when making predictions. What it does is that it assigns different weights to elements in a sequence, helping the model to prioritise what is important information and capture dependencies, regardless of their position in the data.

Q8) What are LLMs?

LLMs (large language models) are AI models that are trained on huge amounts of textual data to understand and generate human-like language. These LLMs also use the architecture of transformers to process and analyse textual data, which enables them to perform tasks such as text generation, translation, summarization etc. Some examples of LLMs that I have also used and worked with include BERT, GPT, XLM Roberta, llama etc.

Q9) What are hyperscalers?

Hyperscalers are large-scale companies or as discussed in class are data center operators that are capable of providing extensive cloud computing infrastructure and services. They also support high workloads and massive scalability for storage and processing for high demand applications like AI and big data.

Q10) What is AWS?

AWS (Amazon Web Services) is a cloud computing platform provided by Amazon. It offers a wide range of services, including computing power, storage, and databases enabling businesses to build, deploy, and scale applications in the cloud.

Q11) What is GCP?

GCP (Google Cloud Platform) is a cloud computing service provided by Google, offering a number of cloud services including computing, storage, data analytics etc which can benefit businesses and developers.

Q12) What is Azure?

Azure is a cloud computing platform that is provided by Microsoft, offering a wide range of services that include virtual machines, databases, AI, networking etc which can help businesses to thrive.

Q13) What is Bias?

Bias in AI refers to when a model is trained on biased data and it leads to unfair results.

Q14) What is Fairness?

Fairness in AI is when an AI model makes predictions that are unbiased and it's fair and just for all individuals, regardless of their background, identity or characteristics.

Q15) What is Trust?

Trust in AI refers to the confidence that the users have in the AI systems to make accurate, reliable and ethical decisions. It involves transparency and fairness ensuring that AI gives us fair and transparent outcomes.

Q16) What is accountability?

Accountability in AI refers to the responsibility of the organizations, developers, and stakeholders to ensure that AI systems operate ethically and safely. It involves us being answerable for the decisions made by AI.

Q17) What are AI related services offered by AWS, GCP and Azure?

AWS:

- **Amazon SageMaker:** A fully managed service for building, training, and deploying machine learning models
- **AWS Deep Learning AMIs:** Pre-built machine learning environments for model training and experimentation.

GCP:

- **AI Platform:** A number of services for building, training, and deploying machine learning models at scale.
- **Cloud Natural Language API:** NLP for analyzing and understanding text data, including sentiment analysis and entity recognition.

Azure:

- **Azure Machine Learning:** A cloud-based platform for building, training, and deploying machine learning models.
- **Azure Cognitive Search:** Adds AI-powered search capabilities to applications, including NLP and image recognition features.

Some additional questions covered in class

Q18) What is a paperclip maximizer?

A **paperclip maximizer** is a thought experiment used to illustrate the potential risks of artificial general intelligence (AGI) if it is not aligned with human values. The idea is that if an AGI's sole goal is to maximize the number of paperclips it produces, what it could comprehend is that the goal would be to consume all the resources to create as many paperclips as possible without considering any environmental damage or human well-being.

Q19) What is an alignment problem?

The **alignment problem** in AI refers to the challenge of ensuring that artificial intelligence systems, particularly advanced ones like artificial general intelligence (AGI), align with human values, goals, and ethical principles.