



Batch: C3 Roll No.: 110

Experiment / assignment / tutorial No. 1

Title: Study of Artificial Intelligent project.

Objective: To study various AI projects for their architectures. Complexity, programming language, applications and other AI related concepts.

Expected Outcome of Experiment:

| Course Outcome | After successful completion of the course students should be able to |
|----------------|--|
| CO1 | Understand the history & various application of AI and choose appropriate agent architecture to solve the given problem. |

Books/ Journals/ Websites referred:

1. http://en.wikipedia.org/wiki/List_of_artificial_intelligence_projects
2. http://www.cs.cornell.edu/courses/cs478/2002sp/mllinks/interesting_ai_demos_and_project.htm
3. <http://homepages.inf.ed.ac.uk/rbf/AIMOVIES/AImovai.htm>
4. “Artificial Intelligence: a Modern Approach” by Russell and Norving, Pearson education Publications
5. “Artificial Intelligence” By Rich and knight, Tata McGraw Hill Publications

Pre Lab/ Prior Concepts:

History and evolution of AI, Artificial intelligence: definitions and theories.

Historical Profile:

AI research is highly technical and specialised and is also divided by several multidisciplinary technical issues. So far there are many projects those have been developed and are in progress to work on those issues. Students must learn the applications of intelligent robots by studying various such projects to know the depth and complexity of the course.

New Concepts to be learned:

Applications of AI, Current research and future research potential in the field.



Chosen Project Name: ChatGPT

Project Description:

ChatGPT is a language model developed by OpenAI, based on the GPT (Generative Pre-trained Transformer) architecture. GPT-3.5, the model I'm built upon, is the third iteration of the GPT series and is known for its impressive language understanding and generation capabilities.

Key features of ChatGPT include:

1. **Generative Nature:** ChatGPT is designed to generate human-like text based on the input it receives. It can be used for a variety of natural language processing tasks, including conversation, content creation, code generation, and more.
2. **Pre-training:** The model is pre-trained on a diverse range of internet text, allowing it to learn grammar, facts, reasoning abilities, and some aspects of common sense. This pre-training enables the model to understand and generate coherent and contextually relevant responses.
3. **Large Scale:** GPT-3.5 is a large-scale model, trained with 175 billion parameters. This vast number of parameters contributes to the model's ability to capture complex patterns and nuances in language.
4. **Context Awareness:** ChatGPT is capable of understanding and generating text in context, making it suitable for conversational interactions where it can maintain a coherent dialogue and respond appropriately to user inputs.
5. **Fine-tuning:** OpenAI provides the capability for users to fine-tune the model on specific tasks or domains, allowing for customization and improvement in performance for particular applications.

ChatGPT has been used in various applications, such as chatbots, content creation, language translation, and more. It represents a significant advancement in natural language processing and has been widely adopted for its versatility in understanding and generating human-like text.



Project category/field (Game, NLP etc): Intelligent system, NLP

Agent architecture: (State just name): Learning Based

Programming language in which the project is/was developed: Python

Awards won by the project: 27th Annual Webby Award

Nature of the project (Experimental/in use in real world):

(Explain in brief why experimental or how it is useful in real world)

Both experimental and useful in real world

Experimental in the context of ChatGPT refers to the fact that it is a product of ongoing research and development in the field of artificial intelligence. The experimental nature of the model means that it continues to be refined and improved based on user feedback and emerging advancements in AI.

Useful in real world because it can be used to automate many manual things.

Applications of the project:

ChatGPT's usefulness in the real world can be attributed to several factors:

1. Natural Language Understanding: ChatGPT demonstrates a high level of natural language understanding, making it valuable for applications such as chatbots, virtual assistants, and customer support systems. Its ability to interpret and generate human-like text allows for more intuitive and interactive user experiences.

2. Content Generation: The model is proficient in generating coherent and contextually relevant text, making it useful for content creation. It can assist with drafting emails, writing articles, generating creative content, and even coding snippets.



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3. Problem Solving: ChatGPT can be used for problem-solving tasks by providing insights, explanations, or suggestions in various domains. It can assist users in understanding complex topics, solving queries, and exploring creative solutions.

4. Educational Support: The model can serve as a tool for education, helping students and learners by providing explanations, answering questions, and offering additional information on a wide range of topics.

5. Language Translation: ChatGPT's language capabilities make it suitable for language translation tasks, facilitating communication across different languages and cultures.

6. Prototype Development: In the development of new applications, ChatGPT can be used as an experimental tool to quickly prototype and test language-related features before more specialized models are integrated.

7. Innovation and Research: The experimental nature of ChatGPT fosters innovation in the field of natural language processing. Researchers and developers can explore its capabilities, identify limitations, and contribute to the ongoing improvement of language models.



Chat session with any chatbot(questions should vary difficulty level):

A

You

2. In AI is a combination of data structures and interpretive procedures.

- A) Knowledge
- B) Meta-knowledge
- C) Artificial Knowledge
- D) Performance

Answer:

ChatGPT

ChatGPT

The correct answer is:

B) Meta-knowledge

A

You

Define Artificial Intelligence in terms of human performance.

ChatGPT

ChatGPT

Artificial Intelligence (AI) is the field of computer science dedicated to creating systems that can perform tasks that typically require human intelligence. In terms of human performance, AI aims to develop machines or systems that can mimic or simulate various aspects of human cognitive functions, problem-solving abilities, learning, perception, and decision-making. The goal is to design and implement systems that exhibit intelligent behavior comparable to or exceeding that of humans in specific tasks or domains.

In essence, AI seeks to replicate and automate tasks that, historically, only humans could perform, aiming to achieve similar or superior levels of performance across a wide range of activities. This includes areas such as natural language understanding, visual perception, pattern recognition, decision-making, and problem-solving. AI systems are designed to adapt, learn from experience, and improve their performance over time, much like humans do in their cognitive processes.

A

You

1+2 **3 =?

ChatGPT



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ChatGPT

In the expression "1+23," the order of operations follows the principles of arithmetic. The exponentiation operation () takes precedence over addition. Therefore:

$$1+2^3=1+8=9$$

$$1+2$$

3

$$=1+8=9$$

So,

$$1+2^3$$

$$1+2$$

3

equals 9.



Post Lab Descriptive Questions:

1. is called the father of AI.

- A) James C Gosling
- B) Dennis Ritchie
- C) Alan Turing
- D) Isaac Newton

Answer: Alan Turing

2. In AI is a combination of data structures and interpretive procedures.

- A) Knowledge
- B) Meta-knowledge
- C) Artificial Knowledge
- D) Performance

Answer: Meta-knowledge

Post Lab Descriptive Questions:

1. Define Artificial Intelligence in terms of human performance.

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2. What is a Turing test?

The Turing test, proposed by the British mathematician and computer scientist Alan Turing in 1950, is a test of a machine's ability to exhibit intelligent behavior equivalent to, or indistinguishable from, that of a human. The test is designed to assess a machine's capability to engage in natural language conversation.



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In the Turing test, a human judge engages in a conversation with both a human and a machine, without knowing which is which. If the judge cannot reliably distinguish between the human and the machine based on the conversation, the machine is said to have passed the Turing test.

The Turing test is not a definitive measure of intelligence, as it focuses on the ability to imitate human conversation rather than overall cognitive abilities. Critics argue that passing the Turing test does not necessarily imply true understanding or consciousness in a machine. However, it remains a significant concept in the field of artificial intelligence and serves as a benchmark for evaluating natural language processing and conversational abilities in machines.

3. Define an Omniscient agent. Are intelligent agents Omniscient?

An omniscient agent, in the context of intelligent agents, is an agent that possesses complete and perfect knowledge about its environment, including all past, present, and future states. This means that an omniscient agent knows everything that has happened, is happening, and will happen within its domain.

In reality, achieving true omniscience is practically impossible due to various factors, including the inherent limitations imposed by the laws of physics, uncertainty, and the complexity of many real-world systems. Intelligent agents, which are entities designed to perceive their environment and make decisions to achieve specific goals, typically operate with partial and imperfect knowledge.

Intelligent agents aim to gather relevant information from their environment through sensors and use that information to make informed decisions. However, they are not omniscient because they often deal with incomplete, uncertain, or ambiguous information. Instead, these agents rely on their algorithms, learning capabilities, and decision-making processes to navigate and interact with their environment to the best of their abilities.

In summary, intelligent agents are not omniscient; they operate based on the information available to them and are designed to adapt and learn from their experiences in order to improve their decision-making over time.

4. What can today's AI systems do?

Natural language processing: AI systems can understand and generate human language, enabling applications such as chatbots and language translation.



Image and speech recognition: AI is proficient in recognizing patterns in images and speech, leading to advancements in facial recognition, image analysis, and voice-activated systems.

Machine learning and predictive analytics: AI systems can analyze data patterns, make predictions, and provide insights in various domains, aiding decision-making processes.

Autonomous vehicles: AI technologies contribute to the development of self-driving cars, incorporating capabilities for perception, decision-making, and control.

Personalization and recommendation systems: AI is widely used to customize user experiences by providing personalized recommendations in areas like online shopping, streaming services, and content delivery.

5. What can today's AI systems not do?

Common Sense Reasoning: AI systems often struggle with understanding and applying common sense knowledge, leading to limitations in tasks that require human-like intuition and reasoning.

True Understanding of Context: While AI can perform context-aware tasks to some extent, achieving a deep and nuanced understanding of context, especially in complex or ambiguous situations, remains challenging.

Creativity and Innovation: AI systems can generate content and solutions based on learned patterns, but true creativity, innovation, and the ability to think outside predefined parameters are generally beyond their current capabilities.

Empathy and Emotional Intelligence: AI lacks genuine emotional intelligence and empathy. While some systems can simulate emotional responses, they don't truly understand emotions in the way humans do.

Adapting to Unforeseen Circumstances: AI systems may struggle when faced with novel or unexpected situations, as they typically rely on pre-existing data and patterns. Adapting to entirely new scenarios can be a significant challenge.

Understanding Humor and Sarcasm: Interpreting nuances of humor, sarcasm, and other forms of figurative language poses difficulties for AI systems, as these often rely on cultural context and subtle cues.



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6. Design ten questions to pose to a man or a machine that is taking a Turing test.

1. What is your favorite childhood memory, and why does it hold significance for you?
2. Can you describe a recent personal experience that had a strong emotional impact on you? How did it make you feel?
3. Share your thoughts on a complex societal issue, such as climate change or ethical considerations in artificial intelligence.
4. Discuss a book or movie that has influenced your perspective on life. What aspects of the story resonated with you?
5. Tell me about a challenging problem you faced recently. How did you approach it, and what was the outcome?
6. What are your hobbies or interests, and how do they contribute to your overall well-being?
7. Reflect on a time when you had to adapt to a new environment or learn a new skill. What did you take away from that experience?
8. Explain your views on the role of technology in society. How do you see it evolving in the future?
9. Share a personal goal you have set for yourself and the steps you are taking to achieve it.
10. Discuss a piece of art or music that has a special place in your heart. What emotions or memories does it evoke for you?