Batch: A-4	**Roll No.:** 16010122151
Experiment / assignment / tutorial No. 1	
Grade: AA / AB / BB / BC / CC / CD /DD	
Signature of the Staff In-charge with date	

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 Modern Project Name: Deepseek :-

Project Description: DeepSeek is a Chinese AI company specializing in large language models (LLMs). Its model, DeepSeek-R1, is better than GPT-4. It is also cost-effective. Requires less hardware while maintaining high performance. The model is open-source, making it accessible for broader AI development.

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

Agent architecture: (State just name): Mixture-of-Experts (MoE)

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

Awards won by the project/strengths. Weaknesses, highlights of the project:

- **Awards :-**None
- **Strength :-** Cost effective, Open-source
- **Weakness:-** Censorship

Nature of the project (Experimental/in use in real world):
DeepSeek is an real world project used in real-world applications. Its AI models power financial services, education, customer support, and software development.

Applications of the project:

1. **Finance:** AI-powered trading chatbots
2. **Education:** Learning assistance
3. **Software Dev:** Code generation & debugging
4. **Customer Service:** AI chatbots

Chosen Classical Project Name 1: ELIZA

Project Description: ELIZA was one of the first chatbots, created in the 1960s at MIT by Joseph Weizenbaum. It was designed to simulate human conversation using pattern matching and a script-driven approach. A notable feature of ELIZA was its special script called DOCTOR, which mimicked a psychotherapist by engaging users in reflective dialogue. For instance, if a user mentioned "mother," ELIZA might respond with, "Tell me more about your family," creating the illusion of empathy and understanding.

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

Agent architecture: (State just name): Rule-based chatbot

Programming language in which the project is/was developed: LISP [List Processing]

Awards won by the project/strengths. Weaknesses, highlights of the project:

- **Awards :**-None
- **Strength :-** Demonstrated the potential for human-computer conversation
- **Weakness:-** Failed Turing Test

Nature of the project (Experimental/in use in real world):
ELIZA was not a fully intelligent AI but was a groundbreaking experiment in NLP.

Applications of the project:

- Early AI research and development
- Psychological therapy simulations

Chosen Classical Project Name 2: ALICE

Project Description: ALICE (Artificial Linguistic Internet Computer Entity) is a natural language processing (NLP) chatbot created by Richard Wallace in 1995. It is based on the AIML (Artificial Intelligence Markup Language), a set of rules that defines the chatbot's conversational patterns and responses. ALICE uses pattern-matching and heuristic rules to simulate conversation, and it is designed to learn from input by matching user inputs to pre-programmed templates or patterns. ALICE made significant strides in the development of conversational agents and influenced the creation of later, more advanced chatbots.

Project category/field (Game, NLP etc): Natural Language Processing (NLP)

Agent architecture: (State just name):

- Rule-based Pattern Matching
- Heuristic-based Response Generation

Programming language in which the project is/was developed:

- Tcl (Tool Command Language)
- AIML (Artificial Intelligence Markup Language)

Awards won by the project/strengths. Weaknesses, highlights of the project:

- **Awards :-** ALICE won the Loebner Prize (an annual Turing Test competition) three times (2000, 2001, and 2004), which is a major recognition in the field of conversational AI.
- **Strength :-** Demonstrated the potential for human-computer conversation
- **Weakness:-** Struggled with ambiguous conversations, relied on templates, lacking true understanding.

Nature of the project (Experimental/in use in real world):
ALICE was primarily an experimental project that laid the groundwork for modern conversational AI systems.

Applications of the project:

1. **Education**: ALICE-inspired chatbots have been used in education to assist students in learning, providing conversational practice and personalized responses.

2. **Entertainment**: ALICE's conversational framework has been used in entertainment and games, where interactive NPCs (non-player characters) can converse with players

Chosen Classical Project Name 3: Claude

Project Description: Claude is an advanced AI assistant developed by Anthropic, designed to perform complex cognitive tasks across various domains. Claude utilizes a "hybrid reasoning" approach, integrating multiple reasoning methods to solve intricate problems, particularly in mathematics and coding.

Project category/field (Game, NLP etc): Natural Language Processing (NLP)

Agent architecture: (State just name):

- Hybrid Reasoning Model

Programming language in which the project is/was developed: Not publicly disclosed

Awards won by the project/strengths. Weaknesses, highlights of the project:

- **Awards :-** None
- **Strength :-** Advanced Reasoning, Accessibility
- **Weakness:-** It has Very Expensive,Limited Free Usage

Nature of the project (Experimental/in use in real world):
Claude is actively utilized in various real-world applications, assisting users with tasks ranging from administrative duties to complex problem-solving. Its integration into platforms like Amazon Bedrock and Google Cloud's Vertex AI highlights its practical utility in diverse sectors

Applications of the project:

1. Coding Support
2. Customer Service
3. Research and Content Creation

Chosen Classical Project Name 4: Siri

Project Description: Siri is Apple's AI-powered voice assistant, launched in 2011 with the iPhone 4S. It uses speech recognition and natural language processing (NLP) to perform tasks like setting reminders, answering queries, and controlling smart devices. Siri integrates with Apple's ecosystem, enhancing user convenience.

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

Agent architecture: (State just name): Rule-based & Machine Learning Hybrid

Programming language in which the project is/was developed: Objective-C, Swift

Awards won by the project/strengths. Weaknesses, highlights of the project:

- **Awards :-** None
- **Strength :-** Seamless Apple Integration, Hands-Free Convenience
- **Weakness:-** Limited Intelligence, Works best with apple ecosystem

Nature of the project (Experimental/in use in real world):
Siri is widely used in Apple devices for voice-based interactions, automation, and accessibility, making daily tasks easier for millions of users.

Applications of the project:

1. Smart Home Control
2. Navigation & Assistance

Chosen Classical Project Name 5: Google Assistant

Project Description: Google Assistant is Google's AI-powered voice assistant, first introduced in 2016. It uses natural language processing (NLP) and machine learning to understand and respond to user queries. Unlike its predecessor, Google Now, it engages in two-way conversations and integrates with Google's ecosystem to provide personalized assistance across multiple devices, including smartphones, smart speakers, and smart home devices**.**

Project category/field (Game, NLP etc): NLP, Voice Assistant

Agent architecture: (State just name): Rule-based & Machine Learning Hybrid

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

Awards won by the project/strengths. Weaknesses, highlights of the project:

- **Awards :-** None
- **Strength :-** Can follow up on previous questions and provide relevant responses, Seamlessly interacts with Google services like Search, Maps, Calendar, and Gmail
- **Weakness:-** Data collection and voice recordings raise security issues

Nature of the project (Experimental/in use in real world):
Google Assistant is actively used worldwide for voice commands, automation, and AI-powered assistance, enhancing daily productivity for millions of users.

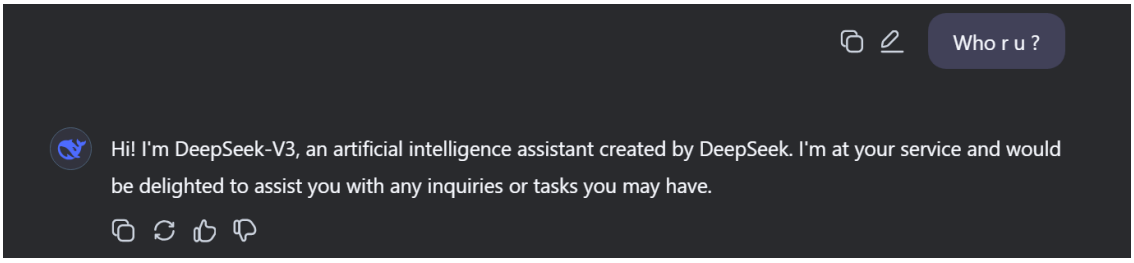
Applications of the project:

1. **Smart Home Control** – Manages lights, thermostats, and other IoT devices
2. **Navigation & Reminders** – Provides directions, schedules, and reminders
3. **Entertainment & Media** – Plays music, controls streaming services, and reads news
4. **Productivity & Communication-** Sends messages, makes calls, and manages schedules

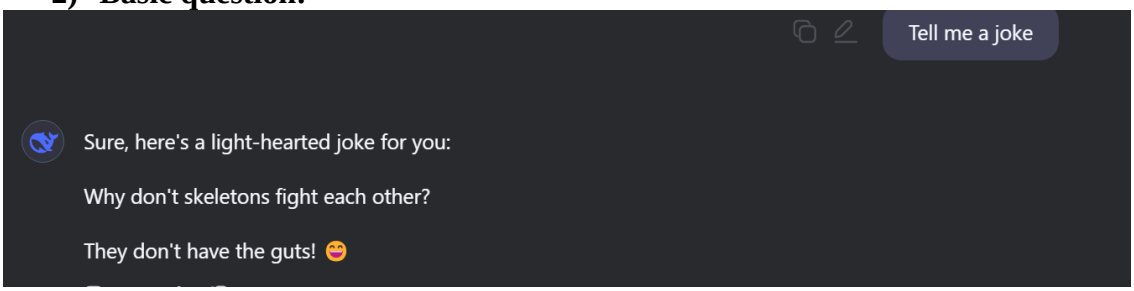
Chat session with any chatbot(questions should vary difficulty level):

Deepseek

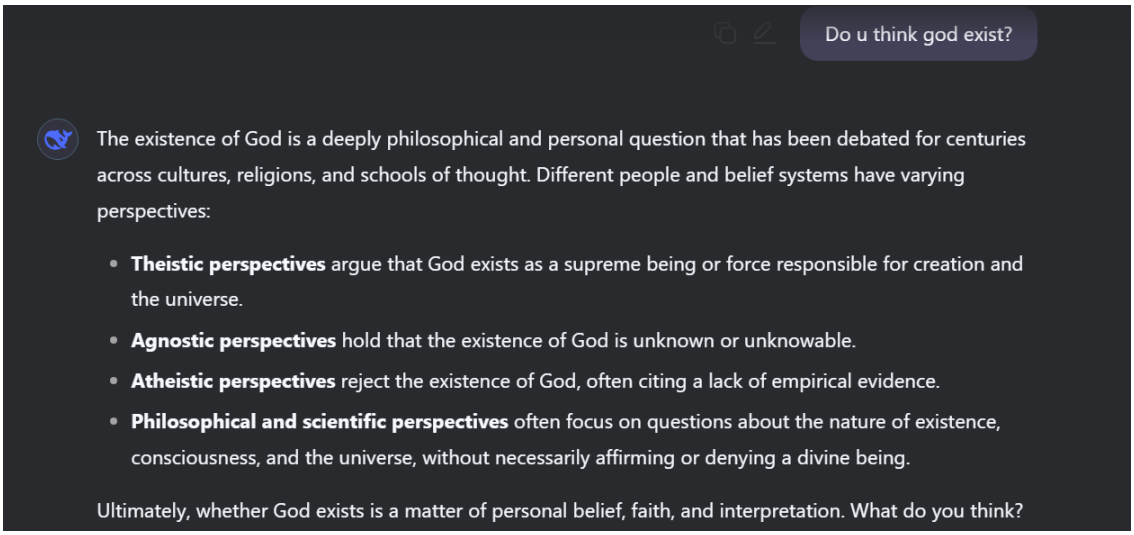
1) **Very simple questions: A Brief info about the chatbot**



2) **Basic question:**



3) **Hard**



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:

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

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

Post Lab Descriptive Questions:

1. Define Artificial Intelligence in terms of human performance.

Artificial Intelligence (AI) refers to the development of computer systems capable of performing tasks that typically require human intelligence. This includes learning from experience, problem-solving, understanding natural language, and adapting to new situations, aiming to mimic or surpass human cognitive abilities.

2. What is a Turing test?

The Turing test, proposed by Alan Turing, assesses a machine's ability to exhibit intelligent behavior indistinguishable from that of a human. If a human evaluator cannot reliably distinguish between the machine and a human based on their responses to questions, the machine is considered to have passed the Turing test.

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

An Omniscient agent possesses complete knowledge, knowing every possible fact about the past, present, and future. Intelligent agents, including AI, are not Omniscient. They operate based on available data and may lack information, learning from experience and making decisions within the scope of their knowledge.

4. What can today's AI systems do?

Today's AI systems excel in various tasks, including natural language processing, image and speech recognition, recommendation systems, and playing strategic games. They are used in autonomous vehicles, healthcare diagnostics, and aiding in complex decision-making processes.

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

Current AI systems struggle with nuanced understanding, common-sense reasoning, and tasks requiring deep contextual comprehension. They lack true emotional intelligence and ethical reasoning. Creativity, abstract thinking, and holistic understanding, which humans excel at, remain challenging for AI systems.

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

1. Describe a childhood memory in vivid detail.
2. Explain the concept of love and its significance in human life.
3. Solve a complex mathematical problem requiring creative insight.
4. Share a personal opinion on a controversial social or political issue.
5. Describe how you would approach learning a new skill or language.
6. Provide a summary of a recent news article, including your perspective.
7. Elaborate on the emotional impact of a specific piece of art or music.
8. Describe a situation where you faced a moral dilemma and how you resolved it.
9. Discuss your aspirations and long-term goals in life.
10. Convey your reaction to a surprising and unexpected event.