Name: *Zain Israr* ***Arid No:*** *21-Arid-685*

Section: *B* ***Semester:*** *BSCS 3B*

Date: *30-10-2022* ***Submitted To:*** *DR Saif*

Question No 1:

Artificial intelligence Success Stories and Big Project during the following Era:

The birth of artificial intelligence 1952 to 1956
In the 1940s and 50s, a handful of scientists from a variety of fields mathematics, psychology, engineering, economics and political science began to discuss the possibility of creating an artificial brain. The field of artificial intelligence research was founded as an academic discipline in 1956.Following Researches in 1952-1956

1-Cybernetics and early neural networks.
2-Turings test.
3-Game AI.
4-Symbolic reasoning and the Logic Theorist.
5-Dartmouth Workshop 1956 the birth of AI.

Symbolic AI 1956 to 1974

There were many successful programs and new directions in the late 50s and 1960s. Among the most influential were these

1-Financing.

2-Natural language.

3-Micro-worlds.

4-Automata.

Limited computer power,The frame and qualification problems,Moravecs paradox,Commonsense knowledge and reasoning,Intractability and the combinatorial explosion are the problem facing.
The end of funding
The agencies which funded AI research such as the British government, DARPA and NRC became frustrated with the lack of progress and eventually cut off almost all funding for undirected research into AI. The pattern began as early as 1966 when the ALPAC report appeared criticizing machine translation efforts. After spending 20 million dollars, the NRC ended all support. In 1973, the Lighthill report on the state of AI research in England criticized the utter failure of AI to achieve its grandiose objectives and led to the dismantling of AI research in that country.

The first AI winter 1974 to 1980

In the 1970s, AI was subject to critiques and financial setbacks. AI researchers had failed to appreciate the difficulty of the problems they faced. Their tremendous optimism had raised expectations impossibly high, and when the promised results failed to materialize, funding for AI disappeared.

The problems

In the early seventies, the capabilities of AI programs were limited. Even the most impressive could only handle trivial versions of the problems they were supposed to solve all the programs were, in some sense, toys.

Bust the second AI winter 1987 to 1993

The term AI winter was coined by researchers who had survived the funding cuts of 1974 when they became concerned that enthusiasm for expert systems had spiraled out of control and that disappointment would certainly follow. Their fears were well founded in the late 1980s and early 1990s, AI suffered a series of financial setbacks.

The first indication of a change in weather was the sudden collapse of the market for specialized AI hardware in 1987. Desktop computers from Apple and IBM had been steadily gaining speed and power and in 1987 they became more powerful than the more expensive Lisp machines made by Symbolics and others. There was no longer a good reason to buy them. An entire industry worth half a billion dollars was demolished overnight.

Boom 1980 to 1987

In the 1980s a form of AI program called expert systems was adopted by corporations around the world and knowledge became the focus of mainstream AI research. In those same years, the Japanese government aggressively funded AI with its fifth generation computer project. Another encouraging event in the early 1980s was the revival of connectionism in the work of John Hopfield and David Rumelhart. Once again, AI had achieved success.

1-The rise of expert systems.
2-The knowledge revolution.
3-The money returns the Fifth Generation project.
4-The revival of connectionism.

AI in 2000 to 2022

With deep learning techniques, the computer learned with the user experience. After all the failed attempts, the technology was successfully established but, until it was in the 2000s that the landmark goals were achieved. At that time, AI thrived despite a lack of government funds and public attention.

AI research is ongoing and expanding in todays world. AI research has grown at a pace of 12.9 percent annually over the last five years, as per Alice Bonasio, a technology journalist. China is expected to overtake the United States as the worlds leading source of AI technology in the next 4 years, having overtaken the United States second position in 2004 and is rapidly closing in on Europes top rank. In the area of artificial intelligence development, Europe is the largest and most diverse continent, with significant levels of international collaboration.

AI in The Future

It has been suggested that we are on the verge of the 4th Industrial Revolution, which will be unlike any of the previous three. From steam and water power throu gh electricity and manufacturing process, computerization, and now, the question of what it is to be human is being challenged. Smarter technology in our factorie s and workplaces, as well as linked equipment that will communicate, view the entire production process, and make autonomous choices, are just a few of the methods the Industrial Revolution will lead to business improvements.

One of the most significant benefits of the 4th Industrial Revolution is the ability to improve the worlds populaces quality of life and increase income levels.

As robots, humans, and smart devices work on improving supply chains and warehou sing, our businesses and organizations are becoming smarter and more productive.

Question No 2:

Branches of Artificial intelligence:

Branches of AI

1. Machine learning

Machine Learning is the technique that gives computers the potential to learn without being programmed, it is actively being used in daily life, machine learning applications in daily life, even without knowing that. Fundamentally, it is the science that enables machines to translate, execute and investigate data for solving real-world problems.

2. Neural Network

Incorporating cognitive science and machines to perform tasks, the neural networ k is a branch of artificial intelligence that makes use of neurology a part of bi ology that concerns the nerve and nervous system of the human brain. Neural network replicates the human brain where the human brain comprises an infinite number of neurons and to code brain-neurons into a system or a machine is what the neural network functions.

3. Robotics

Robots are deployed often for conducting tasks that might be laborious for human s to perform steadily. Major of robotics tasks involved- assembly line for automo bile manufacturing, for moving large objects in space by NASA. AI researchers are also developing robots using machine learning to set interaction at social levels.

4. Expert Systems
Expert systems are built to deal with complex problems via reasoning through the bodies of proficiency, expressed especially in particular of if-then rules instead of traditional agenda to code. The key features of expert systems include extremely responsive, reliable, understandable and high execution.

5. Natural Language Processing
NLP is a method that deals in searching, analyzing, understanding and deriving information from the text form of data. In order to teach computers how to extract meaningful information from the text data, NLP libraries are used by programmers. A common example of NLP is spam detection, computer algorithms can check whether an email is a junk or not by looking at the subject of a line, or text of an email.

Question No 3:

Programming Languages in Artificial intelligence:

Best Programming Languages for Artificial Intelligence
1. Python
When it comes to AI, undoubtedly Python is the best language for it. There are many reasons why you should choose Python over any other programming languag es for AI and one of them is it being very simple and easy to learn.
Due to its short syntax, it enables you to get more work done by writing very littl e code.
The time required for development is very less compared to other languages.

2. R
R is one of the oldest and the best language when it comes to statistics, visualizations of data, big data modeling, and data analysis, and the field of AI d evelopment requires a lot of these.

It is a multi-paradigm language and an open-source language as well.

Besides the regular use of R language, its packages like Tm, GlModels, Class, RODB C are useful for Machine Learning algorithms and AI.

3. Java

Wherever there is a requirement of Object-Oriented Programming, you cannot forget but think about Java.

The best thing about Java is its ability to work efficiently with search algorithms and on big projects.

It is also very easy to debug and maintain code in Java due to its modular and easy to understand syntax. Also, the code written in Java can be run on different platforms and OS which supports Java.

4. Scala

Though Scala is a new language in the AI field, it is gaining fair popularity and recognition in the industry.

It can handle large amounts of big data and is again a multi-paradigm language that supports functional as well as, object-oriented programming styles.

It is easy to read, understand, and write and is quite similar to Java.

5-Rust

Rust is a very loved system-level programming language.

It was created at Mozilla in the year 2010 to write safe and good performance codes where objects can be managed in the source code itself which will help the programmer save time and work. It also saves a lot of memory.

It is a fast language and is the most loved language on StackOverflow.

It is also an open-source programming language and supports multi-paradigm pr ogramming.

Question No 4:

Compare of the following:

1-Simple And Reflex Agent

2-Model And Goal Based Agent

3-Intelligent And Learning Agent

Simple And Reflex Agent

Simple reflex agents

Simple reflex agents respond to current conditions with pre-determined actions. Explore the definition, uses, and examples of simple reflex agents and learn about intelligent agents and the condition-action rule.

Model And Goal Based Agent

Difference between model-based and goal based agents

The agent needs to know its goal which describes desirable situations. Goal-based agents expand the capabilities of the model-based agent by having the goal information. They choose an action, so that they can achieve the goal.

Intelligent And Learning Agent

Intelligent Agent

In artificial intelligence, an intelligent agent IA is anything which perceives its environment, takes actions autonomously in order to achieve goals, and may improve its performance with learning or may use knowledge.
learning agent

A learning agent in AI is the type of agent that can learn from its past experiences or it has learning capabilities. It starts to act with basic knowledge and then is able to act and adapt automatically through learning.