A Review on The Evolution of Artificial Intelligence

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Abstract:

In the distant history, humans had to perform all types of work manually, as there were no machines or advanced technologies available. Science hadn't yet been developed, and numerous ultramodern technologies hadn't yet been constructed. So, the working was completely dependent on the people and humans have recognised that "moment's wisdom is the hereafter's technology. Artificial intelligence (AI) has experienced a significant elaboration since its commencement in the 1950s. This paper provides a comprehensive review of the history, present, and unborn developments of AI. We begin by tracing the early days of AI, including the development of expert systems, emblematic logic, and machine literacy. We also move to the present day, where we examine deep literacy, natural language processing, and the use of AI in colorful diligence. Eventually, we bandy the future of AI, including its eventuality to revise healthcare, education, and transportation. Throughout the review, we bandy the challenges that AI faces, similar as bias, ethics, and explain capability. We conclude that AI has made significant progress in recent times, and that it holds tremendous pledge for the future, but that there's still important work to be done to completely realize itspotential.AI is being extensively spread in all over the world. Digitalization is extensively spread over far and wide with it we can do colorful effects with robotization. In moment's period everything is going to be digital day by day.

Keywords: Artificial Intelligence, Natural Language Processing, Science, Machine Learning.

I.   Introduction:

According to the Merriam Webster dictionary, **"Artificial intelligence is a branch of computer science dealing with the simulation of intelligent behaviour in computers."** When a machine can make intelligent decisions, Artificial intelligence can be considered as a form of intelligence that is produced by machines. [1]The terms machine learning, deep learning, and AI are often used interchangeably, but it is important to note that deep learning is a type of machine learning, and machine learning is a type of AI.

Artificial Intelligence (AI) is a rapidly advancing field that has the potential to revolutionize many aspects of society, including healthcare, transportation, and finance. Over the years, AI has evolved significantly, from simple rule-based systems to complex machine learning algorithms that can learn from large datasets. This review paper aims to provide a comprehensive overview of the evolution of AI, from its inception to the present day, and into the future. The paper will examine the key milestones in AI research, including the development of early AI systems, such as expert systems and decision trees, to the emergence of modern deep learning techniques and neural networks.

The paper will also explore the current state of AI, including the challenges and opportunities facing the field, such as ethical considerations, algorithm bias, and the potential for AI to disrupt employment markets. [1] Furthermore, the paper will consider future developments in AI, including advancements in natural language processing, reinforcement learning, and the potential for AI to develop consciousness. Overall, this review paper aims to provide readers with a thorough understanding of the evolution of AI, its current state, and the potential future developments that may shape the field in the coming years. [3]By examining the past, present, and future of AI, this paper will provide insights into how this field may impact our lives and shape the future of society.
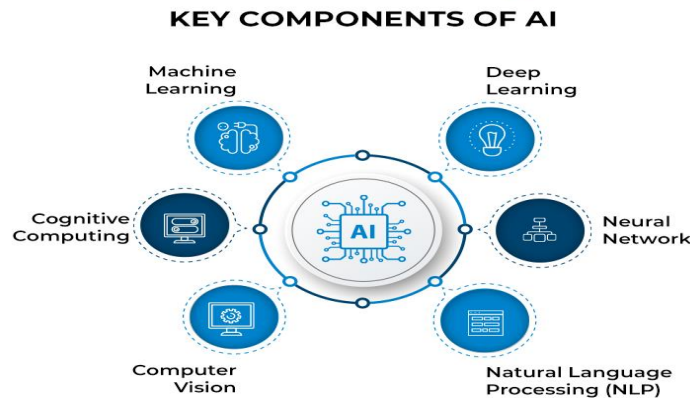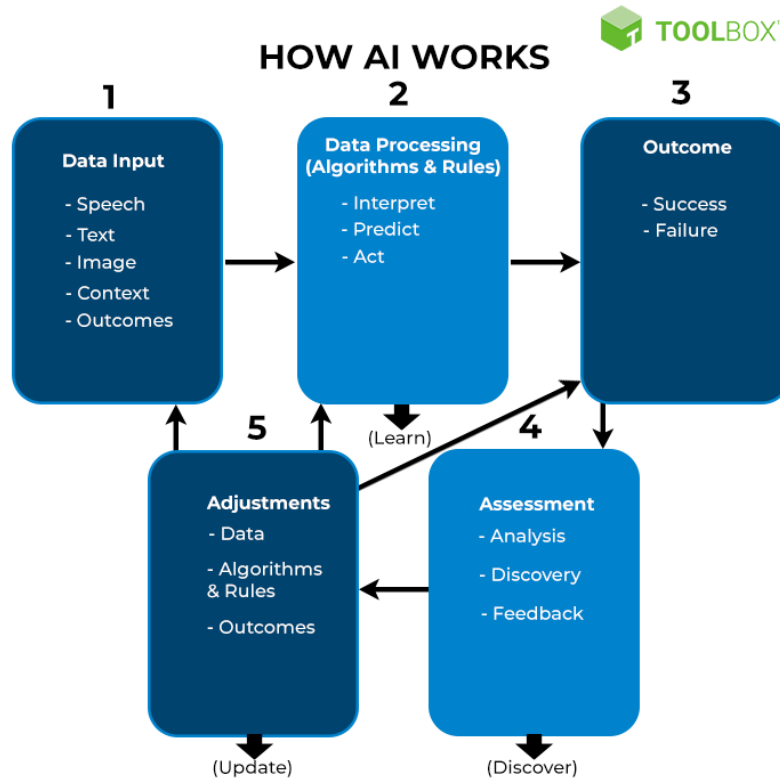
(Image Reference: spiceworks.com)

II.   **Working:**

AI (Artificial Intelligence) is a field of computer science that aims to create intelligent machines that can perform tasks that would typically require human intelligence, such as problem-solving, learning, decision-making, and understanding natural language.

The working of AI can be explained in the following steps:

1. Data Collection: AI requires a large amount of data to learn from. The data can be in the form of images, text, videos, or any other format.
2. Data Pre-processing: Once the data is collected, it needs to be pre-processed to remove any noise, errors, or inconsistencies. This step involves cleaning, formatting, and transforming the data to make it ready for analysis.
3. Training: The pre-processed data is used to train AI models using machine learning algorithms. The models learn patterns and relationships in the data and use them to make predictions or decisions.
4. Testing: After the training phase, the models are tested on a separate set of data to evaluate their performance. This step helps identify any weaknesses or errors in the models and fine-tune them accordingly.
5. Deployment: Once the models are trained and tested, they can be deployed for real-world applications. The models can be integrated into software systems, devices, or platforms to automate tasks or provide intelligent services.

Overall, the working of AI involves collecting data, pre-processing it, training models using machine learning algorithms, testing the models, and deploying them for real-world applications. The process is iterative, and the models can be continually refined and improved with more data and feedback.

(Image Reference: spiceworks.com)

III.   Historic Perspective:

Back in the 1800s, AI was limited in myths, fiction, and speculation. Classical philosophers envisioned machines integrated into human beings. However, they were just portrayed in fiction work like Mary Shelly's "Frankenstein" then. The real initiation in AI began in 1956. The seed that led towards an AI future was a workshop in Darthmod College, attendees of which were claimed as AI leaders for decades to come.

Here's a brief timeline of the past six decades of how AI evolved from its inception.

1956 - John McCarthy coined the term 'artificial intelligence' and had the first AI conference.

<u>1969</u> - Shakey was the first general-purpose mobile robot built. It is now able to do things with a purpose vs. just a list of instructions.

<u>1997</u> - Supercomputer '[Deep Blue](#)' was designed, and it defeated the world champion chess player in a match. It was a massive milestone by IBM to create this large computer.

<u>2002</u> - The first commercially successful robotic vacuum cleaner was created.

<u>2005 - 2019</u> - Today, we have speech recognition, robotic process automation (RPA), a dancing robot, smart homes, and other innovations make their debut.

<u>2020</u> - Baidu releases the LinearFold AI algorithm to medical and scientific and medical teams developing a vaccine during the early stages of the SARS-CoV-2 (COVID-19) pandemic. The algorithm can predict the RNA sequence of the virus in only 27 seconds, which is 120 times faster than other methods.

IV. **Techniques and Applications of AI:**

AI encompasses a broad range of techniques and applications, which can be categorized into the following areas:<u>Machine learning</u>: This involves training an AI model to learn patterns and insights from data. There are various techniques employed in AI, such as supervised learning, unsupervised learning, and reinforcement learning. These techniques have diverse applications, ranging from image and speech recognition, natural language processing to fraud detection and recommendation systems..

1. <u>Natural language processing (NLP)</u>: This involves teaching computers to understand and interpret human language. Some of the applications of AI include chatbots, virtual assistants, sentiment analysis, and language translation..
2. <u>Robotics</u>: This involves using AI to control robots and automate tasks that would otherwise require human intervention. Applications include manufacturing, logistics, healthcare, and home automation. [5]
3. <u>Computer vision</u>: This involves using AI to analyze and interpret visual data, such as images and videos. Maxime Comptier. "LesRessourcesHumaines plus humaines grâce à l'IntelligenceArtificielle". Octopeek. 2018.

[6]Applications encompass facial recognition, object detection, as well as self-driving vehicles.

4. <u>Expert systems</u>: This involves creating AI systems that can mimic the decision-making processes of human experts. Applications include medical diagnosis, financial analysis, and legal decision making.

5. <u>Cognitive computing</u>: This involves creating AI systems that can simulate human thought processes, including perception, reasoning, and decision making. Applications include personalized medicine, fraud detection, and risk analysis.

<u>Deep learning</u>: This is a subset of machine learning that uses neural networks with multiple layers to learn and extract complex features from data. Applications include speech recognition, image classification, and natural language processing. [7]

Overall, AI has a wide range of applications across various industries and domains, and its potential uses are only limited by our imagination and creativity

V.   Future Directions:

AI is a rapidly evolving field with many promising future directions. Here are some potential areas of focus for future AI research and development:

1. <u>Explainable AI</u>: One major challenge with current AI systems is their lack of transparency and interpretability. Explainable AI seeks to address this by developing AI models and algorithms that can provide clear explanations for their decisions and actions.

2. <u>Human-AI collaboration</u>: As AI becomes more integrated into various aspects of society, it is important to explore how humans can effectively collaborate with AI systems. Ashok K. Gupta & Arvind Singhal. [8]This may involve developing new interfaces and interaction models that enable seamless human-AI cooperation.

3. <u>Ethical and social considerations</u>: With the increasing use of AI, it is important to consider the ethical and social implications of AI development and deployment. Future research may focus on developing frameworks for ethical AI design and use, as well as exploring the societal impacts of widespread AI adoption.

4. <u>Continual learning</u>: Current AI systems typically require large amounts of data to train and improve their performance. Continual learning seeks to

develop AI models that can learn and adapt over time, without requiring massive amounts of new data.

5. <u>Quantum computing</u>: The development of quantum computing may enable new forms of AI that are more powerful and efficient than current approaches. Future research may focus on exploring the intersection of quantum computing and AI.

6. <u>Multi-agent systems</u>: multi-agent systems involve multiple AI agents that interact and collaborate with one another to achieve shared goals. Future research may explore the potential of these systems in areas such as robotics, transportation, and supply chain management.

Overall, there are many exciting future directions for AI research and development, and the field is likely to continue to evolve rapidly in the coming years.

Conclusion:

The entire world is on the way of Digitalization and for that purpose the artificial intelligence and machine learning concepts plays an important role Our research paper focuses on the development of intelligent machines and the impact of emerging technologies on our daily lives. [9]Modern machines are capable of providing knowledge-based education and contribute to the enhancement of human intelligence. In future, we don't think and imagine about the progress of world due to only Artificial Intelligence and Innovative Machines. We can't imagine about what happening in surrounding and in all over world because of scientists and engineers. Scientist developed the Robots who is working like a Human Being and also the research is going on to create the best world in future. Youth generation support is one of the most important parts to develop the new technologies. [10] Combination of Science and Engineering and the quality machine learning will surely take the world at its highest fit.

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