Beyond Traditional Artificial Intelligence

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Abstract:- This paper discusses the Artificial Intelligence (AI) evolution from the narrow domain into Artificial General Intelligence (AGI). It also shed lights on specific use cases and their implications on human lives and the different industry segments.

I.   INTRODUCTION

Artificial Intelligence, known as AI, is a rapidly evolving technology and it is really shaping the way we live and work. You must have experienced it while using social media applications or when conducting online purchases. You have definitely noticed that these applications or e-commerce websites are intelligent enough to recommend certain content and products based on your recent and historical behaviors. Not only that, even the new model of vehicles has built-in AI capabilities where the car performs certain actions whenever specific conditions are met. For example, you might have experienced a vehicle slowing down autonomously to prevent collisions whenever getting closer to objects. Driverless cars are also explicit examples of applied artificial intelligence. Smart homes where Internet of Things (IoT) are interlinked with AI to provide powerful solutions and elegant lifestyle. These specific examples represent narrow AI. However, the current trend of AI is moving towards Artificial General Intelligence (AGI). This new horizon of AI aims to create machines that possess human-level intelligence and can understand and do any intellectual task that human can perform. This new AGI field also includes the research into areas like natural language processing, robotics, healthcare and many more. Figure 1 summarizes the differences between narrow AI and AGI.
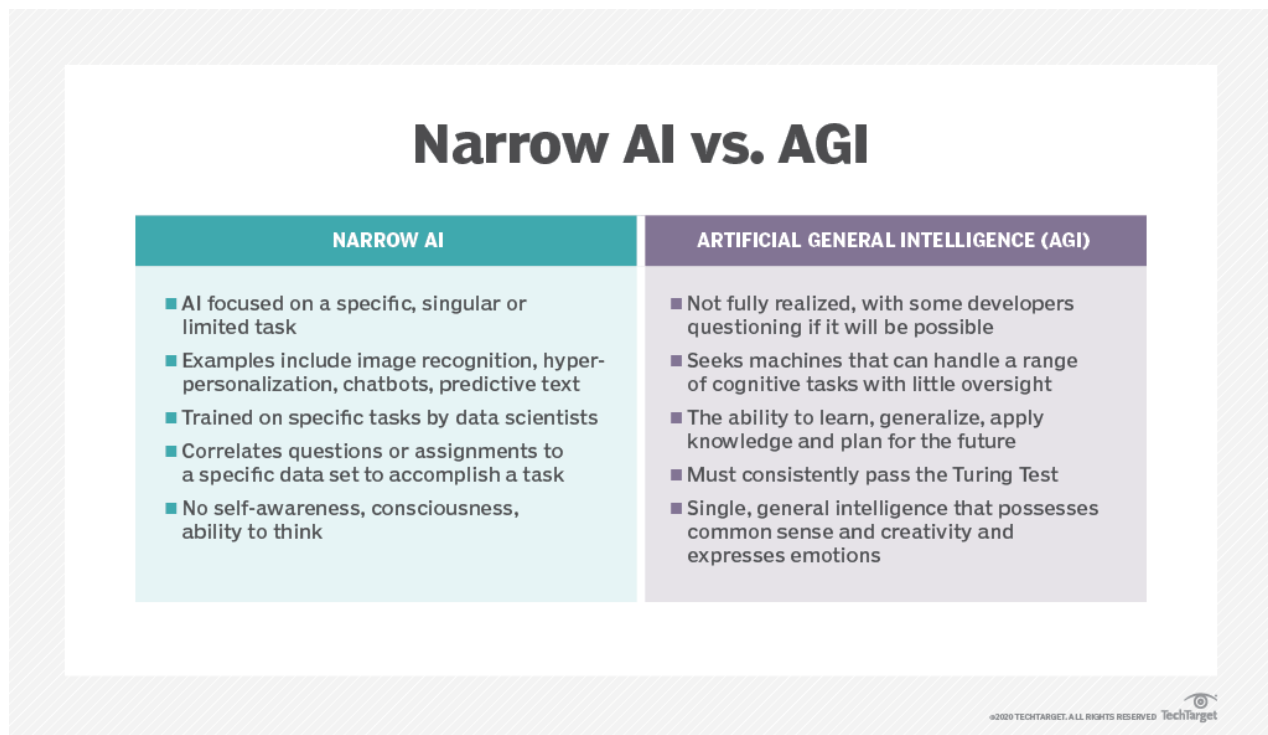

Fig 1: Differences between Narrow AI and AGI

II.   NATURAL LANGUAGE PROCESSING (NLP)

NLP is a branch of computer science that employs AGI in order to enable the machines mimic human beings in understanding text and speech. Figure 2 summarizes the evolution of NLP. It is more likely that you have already interacted with NLP in the form of ChatGPT, customer service chatbots which are widely available in e-commerce websites, digital assistants, voice-operated GPS systems, speech-to-text dictation software, and many others. Moreover, NLP plays a big role in enterprise solutions that aim to increase employee productivity, streamline business operations, and simplify mission-critical business processes. As a practical application of NLP in the energy industry, it is used to read well data and

cross check it with historical information to predict issues and identify potential risks impacting the well's health. As a matter of fact, NLP is considered a big player in the industrial revolution IR4 and it has significant role in predictive and prescriptive maintenance and analysis.
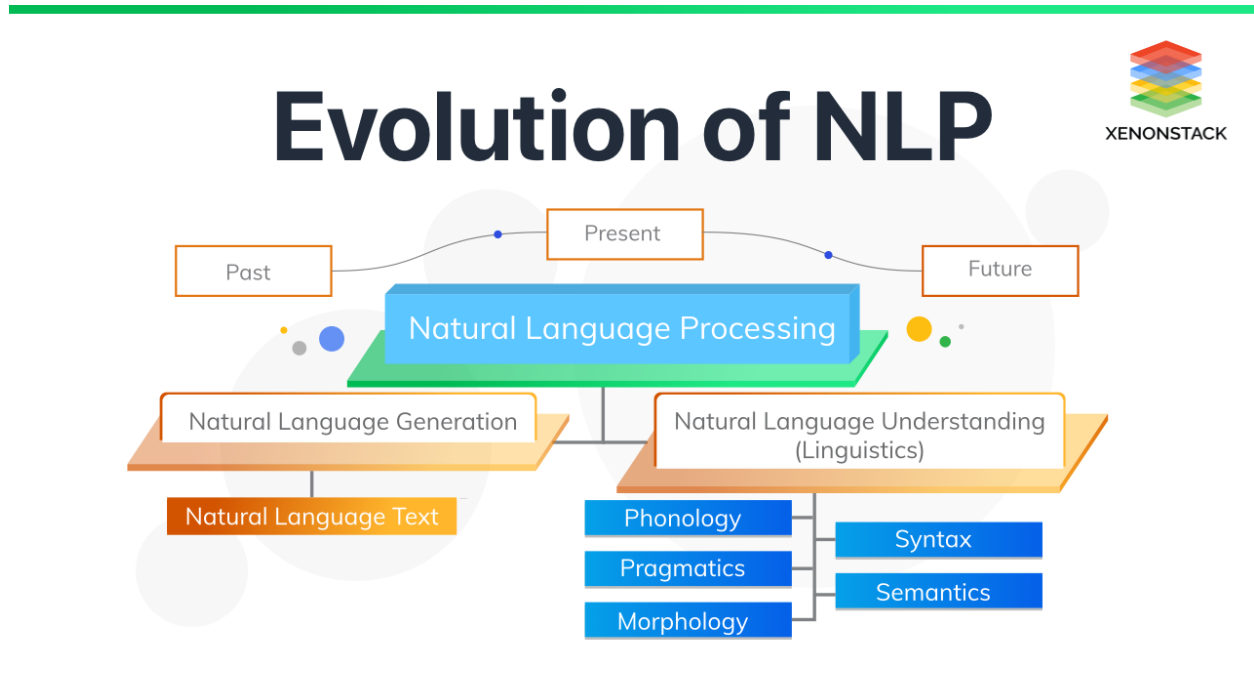

Fig 2: Evolution of NLP

III. ROBOTICS

AI and Robotics are currently driving most of the GDP growth worldwide over the next decade. It is of no wonder knowing that such technologies can boost productivity and eliminate waste. By 2030, AI is expected to contribute an estimated $15.7 trillion to the global economy, more than the current output of China and India combined. This is really massive and a game-changer. This explains why the different industries are now paying more attention to AI enable solutions-it is the era of Industrial Revolution. Robots can be used for tasks such as repairing pipelines, wind turbines, and other energy infrastructure. By automating these functions, energy companies can further improve efficiency, enhance production and reduce costs. Robotic Process Automation (RPA) shown in figure 3 is also an example that uses AI to perform human office tasks that include extracting data, filling in forms, moving files, etc.
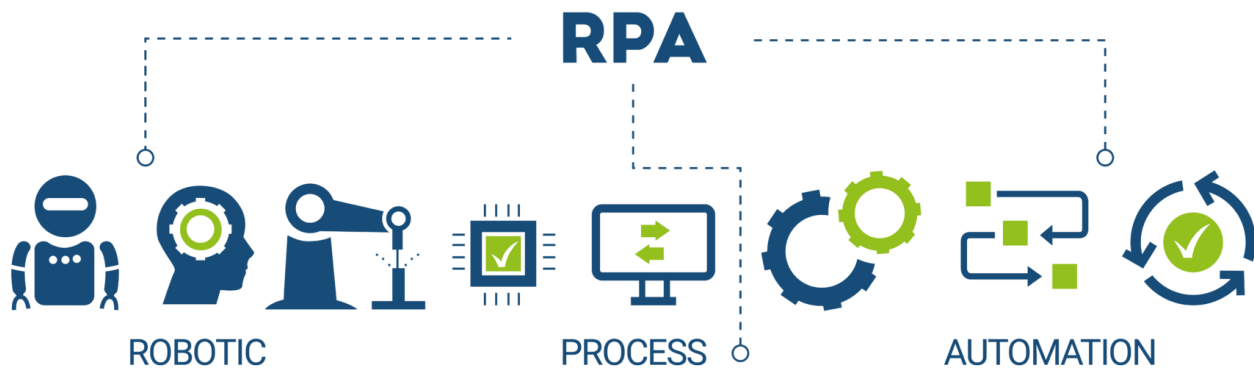

Fig 3: RPA Illustration

IV. CONCLUSION

By now, one might be asking: Does the AI has any role to play in the healthcare industry? As we have seen, AI is almost touching the different aspects of everyone's life especially those that have mobile phones. It has also reached the different industries including the energy sectors and the healthcare is no different. For example, surgical robots were initially approved in the USA in 2000. Although important decisions are still made by human surgeons, these surgical robots provide powerful assistance to surgeons and thus improving their ability to perform operations more efficiently. Robotic surgery includes gynecologic surgery, prostate surgery and head as well as neck surgery. Since 1970, AI has been a focus for diagnosis and treatment of diseases. More recently, IBM's Watson has also been known recently for its focus on precision medicine, particularly cancer diagnosis and treatment. It is apparent from these few examples of AI applications in the different industries that AI cannot completely replace the human being factor in the workplace but rather it will equip them with powerful tools to perform effectively and more efficiently.

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