

AIFE: UNIT-3
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“Artificial Intelligence for Engineering/Engineers (KMC-201)”_

UNIT-3: Natural Language Processing

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TOPIC ON: What is Natural Language Processing?

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What is Natural Language Processing?

Definition of Natural Language Processing :-

- Natural Language Processing can also be called NLP in short.
It is a branch of artificial intelligence, in which computers are designed to understand the languages used by humans such as English, Hindi, Japanese etc.
- Natural language processing has helped in filling the gap between humans and computers because earlier, text had to be written from the keyboard to give instructions to the computer, but now we can give any instructions to the computer by speaking and the computer speaks by us.
After understanding the words going on, it displays the output in front of us accordingly.

History of Natural Language Processing: -

- In 1950, Alan Turing published an article called "Machine and Intelligence", in which he discussed the basic ideas related to NLP.
At the same time an attempt was made to convert the Russian language into English language using the techniques of Natural Language Processing. Before 1980, NLP was working completely on predetermined rules, but after 1980, machine learning algorithms were used with NLP, after which a new revolution started in this field.
- The second revolution in this field came in 2010 due to 'deep learning' because after that the machines kept on improving their abilities with the help of the patterns present in the data.
Well-known products like Amazon Alexa in 2014, Google Assistant in 2017 came in the market, in which the technology of Natural Language Processing was used very well.

Use of Natural Language Processing

- The process of translating one language into another using machines can be done with precision and efficiency due to NLP.
- This facilitates the creation of new types of products that are able to understand the words spoken by humans and work according to those instructions.
- With its help, spam messages can be identified by analyzing the text present in a message and email.
- Natural language processing is also used for sentiment analysis of people. By analyzing the words being used by people on different types of social media, an attempt is made to find out what a person is thinking in the current situations.
- It is also used to identify the grammatical mistakes present in a sentence or paragraph. Its use can also identify spelling mistakes.
- Using this, automatic chatbots can be made, using which the questions asked by the customers can be answered using the machine.

Advantages And Disadvantages of natural language processing

Advantages of natural language processing :-

- It helps in conducting market research and analysis.
- Helps to translate one language into another easily.
- Supports speech-to-text and text-to-speech conversions.
- It helps to manufacture an advanced range of products such as Google Alexa and Siri to solve everyday problems of common people.
- Products manufactured with its help such as modern Chatbot increase the level of customer satisfaction.
- It helps to complete a task quickly and at a low cost.

- It enhances the ability of the machine to process and understand text, due to which it is very useful for technology such as artificial intelligence and machine learning.

Disadvantages of natural language processing :-

1. There is no doubt that NLP is a very advanced technology, which has reduced the distance between humans and machines to a great extent.
But it has its own limitation as the machine cannot understand the emotion behind the words being spoken by a human.
For example, if a person says something out of anger or is speaking happily, the machine cannot guess that it can only understand the words of the human being.
2. Many times it has been seen that there are many mistakes in the accuracy of translation or other work done with the help of NLP in regional languages like Hindi, Russian, Mexican etc., because this language is quite complex.
Therefore, there are many mistakes in the work done using a machine.