SHARP WITTED AGRONAMY

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Abstract

The ripened fruit is getting rotten day by day this examples signifies the present situation of the farmer. The demand for food is raising day by day but the profit for farmer is day by day lessening .This paper would give a Comparative analysis based on Concept of Machine learning incorporated with NLP. This paper which benefits both the producers and Consumers to know what to be cultivated next.This technologies could transform the sector, contributing to food, safety and the reduction of agricultural import and food waste. The data flow model would fluctuate the development of the agriculture sector. Through this Platform the NLP is used to give the input as the information and particular person can analysis the update and can plan the next based on the analysis.

Keywords

Machine learning,, Data ,flow model, Natural Language Processing

Introduction

NLP:

NLP is a branch of AI, which is concerned with providing a machine that can understand various aspects of language that involves text or speech and respond in a way similar to human beings can. It has proven to be existed for more than 50 years and plays a vital role in the field of linguistics.It uses AI to obtain the real-world input and make process in such a way that machine can understand this system of NLP include language understanding, recognition of speech, also language generation NLP includes the system of spoken language that can integrate speech

History of NLP

The process of NLP began in the year 1940, the time when people started to understand the significance of translating one language to another which cultivated in them the idea of creating a machine that can automatically translate it. By 1958,researchers faced obstacles in developing the NLP .one of those researchers named Noam Chomsky, found there was a trouble in recognizing grammatically incorrect sentence in the period of 1957-1970 researchers based on NLP were split into two categories -symbolic and stochastic symbolic refers to focussing on formal language and considered this branch beginning of

AI stochastic refers to the researchers who are interested in the area of NLP concerning statistical methods by the year 1970,they were even more classified in enhancing new area called logic-based paradigms that led to development of prolog ,a programming language after 1970,there came a fourth area of NLP called as discourse modelling, a interchange of language between machine and people that played a role in changing the input by the year 1993,NLP was more significant as information was spread across the internet .this gradually led to the development of NLP

NLP made of:

NLP combines computational linguistics—rule-based modelling of human language—with statistical, machine learning, and deep learning models. Human language is filled:

With ambiguities that make it incredibly difficult to write software that accurately determines the intended meaning of text or voice data.

NLP used for:

NLP is used to understand the structure and meaning of human language by analysing different aspects like syntax, semantics, pragmatics, and morphology.

Then, computer science transforms this linguistic knowledge into rule-based, machine learning algorithms that can solve specific problems and perform desired tasks.

NLP drives computer programs that translate text from one language to another, respond to spoken commands, and summarize large volumes of text rapidly—even in real time. There's a good chance you've interacted with NLP in the form of voice-operated GPS systems, digital assistants, speech-to text dictation software, customer service chatbots, and other consumer conveniences.

NLP also plays a growing role in enterprise solutions that help streamline business operations, increase employee productivity, and simplify mission critical business processes.

Human language is filled with ambiguities that make it incredibly difficult to write software that accurately determines the intended meaning of text or voice data.

Several NLP tasks break down human text and voice data in ways that help the computer make sense of what it's ingesting.

Tasks of NLP:

Many natural language processing tasks involve syntactic and semantic analysis, used to break down human language into machine-readable chunks.

1. Syntatic Analysis:

Syntactic analysis, also known as parsing or syntax analysis, identifies

the syntactic structure of a text and the dependency relationships between

words, represented on a diagram called a parse tree.

2. Semantic Analysis:

Semantic analysis focuses on identifying the meaning of language. However, since language is polysemic and ambiguous, semantics is considered one of the most challenging areas in NLP.

3. Speech Recognition:

Speech recognition, also called speech-to-text, is the task of reliably converting voice data into text data. Speech recognition is required for any application that follows voice commands or answers spoken questions. What makes speech recognition especially challenging is the way people talk—quickly, slurring words together, with varying emphasis and intonation, in different accents, and often using incorrect grammar.

4. Part Of Speech Tagging:

Part of speech tagging, also called grammatical tagging, is the process of determining the part of speech of a particular word or piece of text based on its use and context.

5. Word Sense Disambiguation:

Word sense disambiguation is the selection of the meaning of a word with multiple meanings through a process of semantic analysis that determine the word that makes the most sense in the given context.

6. Co Reference Resolution:

Co-reference resolution is the task of identifying if and when two words refer to the same entity. The most common example is determining the person or object to which a certain pronoun refers (e.g., 'she' = 'Mary'), but it can also involve identifying a metaphor or an idiom in the text

(e.g., an instance in which 'bear' isn't an animal but a large hairy person).

7. Sentiment Analysis:

Sentiment analysis attempts to extract subjective qualities—attitudes, emotions, sarcasm, confusion, suspicion—from text.

8. NLP Generation:

Natural language generation is sometimes described as the opposite of speech recognition or speech-to-text; it's the task of putting structured information into human language.

Types of NLP

NLP uses two analytic techniques to help the machine understand the input text: syntatic analysis and semantic analysis.

Syntatic:-

This analysis is otherwise known as parsing is used to identify the ways in which words are organized using grammar rules.it includes tokenization, part of speech tagging, lemmatization and stemming, stop-word removal.

Semantic analysis:-

The significant of this analysis is to understand the meaning of the text, which process by initially knowing the meaning of individual words and later looks at the combination of words

Speech recognition:-

Translating the language into the text format

Natural Language Understanding:-

The ability of the machine to understand the input given in various aspects of language the initial step in NLU is the speech recognition, where the computer converts the input given in natural language to AI the next hardest process is to understand it

Natural Language Generation:-

The ability of the machine to generate natural language it is easier to accomplish compared to NLU, which initially converts AI to text and then the next to audio

Machine Translation:-

The main use and benefits of NLP is to translate the one language to another

Chatterbot:-

NLP is used in it to communicate with the human beings and to minimize the task

Sentiment Analysis:-

It identifies the emotions present in the input of the text and classify it based on positive, negative or neutral

Advancement in NLP:

Transfer learning is a machine learning technique where a model is trained for one task and repurposed for a second task that's related to the main task. One of the biggest breakthroughs in NLP this year has been the creation of machine learning models that create articles from scratch, with GPT-3 (Generative Pre-trained Transformer 3) leading the way. What's unique about transformers is that they're able to understand the possible before. Come 2022, context of words in a way that wasn't the NLP community is going to be focusing more on BERT (Bidirectional Encoder Representations from Transformers) and Elmo (Embedding's from Language Models). These models have been trained on colossal amounts of data and are able to drastically improve the performance of a wide range of NLP problems. Before, if you wanted to build an NLP model you needed a solid background in the field, coding skills to use open-source libraries, and machine learning knowledge. Not anymore. Although low-code / no-code tools have been around for a while now, they're set to become commonplace this year. SaaS companies like Monkey Learn aim to democratize NLP and machine learning technology, allowing non-technical users to perform NLP tasks that were once only accessible to data scientists and developers Most NLP advances to date have been focused on English. But companies like Google and Facebook are now publishing pre-trained multilingual models, which perform just as well or better than monolingual models. When training a model for NLP, combining both supervised and unsupervised methods seems to provide more accurate results. Supervised learning, commonly used for tasks such as topic

classification, requires a large amount of tagged data and many iterations until a model can make accurate predictions. In unsupervised learning, on the other hand, there's no labelled data: the model learns from input data and is able to detect patterns and make inferences on unseen data, on its own. An example of this is clustering, where similar objects are grouped together. Reinforcement learning is an area of machine learning that is predicted to grow in 2022. Basically, reinforcement algorithms learn by doing, through a process of trial and error using feedback from previous actions and experiences. In NLP, reinforcement learning can be used to speed up tasks like question answering, machine translation, and summarization. Currently, NLP models are trained first with supervised algorithms, and then fine-tuned using reinforcement learning. This has been a tough year for customer service. As a result of the Covid-19 pandemic, there has been a tremendous increase in support tickets across all industries, from travel to finance.

For businesses, it has been a challenge to deal with increasing ticket volume and provide fast responses to urgent queries. More than ever, companies are realizing they need to automate simple customer service tasks to help them handle customer queries in a faster and more effective way. Sentiment analysis, or opinion mining, will keep playing an important role in 2022, allowing businesses to monitor social media and gain real-time insights into how customers feel towards their brand or products. Using NLP tools to gauge brand sentiment can help companies identify opportunities for improvement, detect negative comments on the fly (and respond proactively), and gain a competitive advantage. Other interesting use cases for sentiment analysis in social media monitoring include analysing the impact of marketing campaigns, and evaluating how customers react to events like a new product release.NLP has become an essential tool to reduce the time and human effort to detect and prevent the spread of fake news and misinformation. This year, with so much false information on Covid-19 making the rounds, we've already seen some interesting approaches towards automatic fake news detection (using transformers, no less), so we'll definitely see more of it during 2022.Another way NLP is being used for positive impact is cyberbullying detection. Classifiers are being built to detect the use of offensive, and insulting language, or hate speech across social media. Considering the on-going debate on whether social media content should be regulated, these NLP applications may become even more relevant Figures:
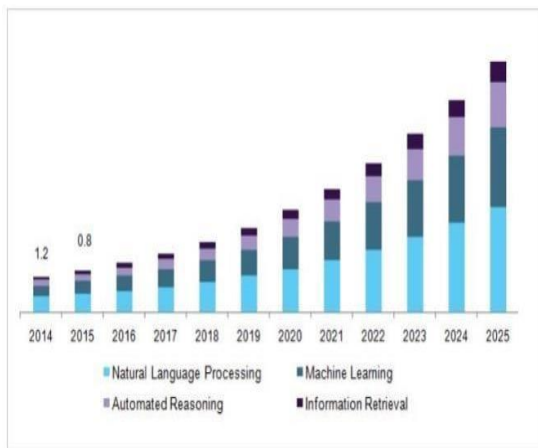

Fig.1-This graph describes about the NLP's development, this graph shows the gradual development of NLP in computing market.

Antiquity of Global Agriculture:

Human started to practise the agriculture 7000 to 10000 years ago(stone age period).The crops that were planted initially by the stone age period peoples are wheat, peas, lentils, bitter vetch, barley, chickpeas, and flax seeds. The passage of word agriculture flown from 105000 years ago. By the historical evidence the initial planted crop was rye peas, lentils, bitter vetch, barley, chickpeas, and flax seeds. The passage of word agriculture flown from 105000 years ago. By the historical evidence the initial planted crop was Rye and the invaded crop was rice which was first invaded by China. After developing stage by stage many other crops were planted such as sorghum,yam,cowpeas,Teff,finger millet,noog, ensete, coffee,watermelon,ra,tamarind,black eyed peas, kola nut, bananas,potato,beans, squash, tomatoes, peanuts, coca, llamas, alpacas, Cassava maize,Cotton,Sugarcane,root vegetables, hybridised bananas. In next comes the Indus civilisation comes into reality in the period of 3300 B.C which is also stated as (Bronze Age).At this age not only rapid growth in population, but also an rapid increase in methane emission. The initial start of irrigation was taken place in Egypt and Mesapotamia.The historical innovation of irrigation is started with the basic steps called Qantas (digging the slopes).The greatest invention of the Bronze Age is developing the advanced tools and techniques to do agriculture in simple way. To do agriculture, the most important component is water so to make avail the water easily the Egypt's builded up the dam reservoirs, water raising machines. In next the farmers improved their farming through different machine based technologies by the early period of 18th century. In last 10 years the scientist has invented the Genetically Modified Organisms which yields high when compared to normal organisms. Right now we introduced many different techniques into the agriculture such as crop monitoring, disease prediction, sprinkler automation system etc.

Antiquity of Indian Agriculture:

The history of agriculture in India dates back to the Neolithic period. India ranks second in the world for agricultural products. In 2016, agriculture and related sectors such as livestock, forestry and fisheries accounted for 17.5% of GDP (Gross Domestic Product) with about 41.49% of the labour force in 2020. As of 2018, agriculture employed more than 50% of India's labour force and contributed 17–18% of the country's GDP. India ranks first in the world with the highest net acreage, followed by the US and China. The economic contribution of agriculture to India's GDP is steadily declining with the country's broad-based economic growth. Nonetheless, agriculture is the broadest economic sector demographically and plays a significant role in the overall socio-economic fabric of India. India exported US$38 billion worth of agricultural products in 2013, making it the seventh largest agricultural exporter in the world and the sixth largest net exporter. Indian agricultural/horticultural and processed foods are exported to more than 120 countries, mainly to Japan, Southeast Asia, SAARC countries, the European Union and the United States.

Farmer plays an important role in the field of agriculture. Different government estimates (Census, Agricultural Census, National Sample Surveys and Periodic Labour Force Surveys) give different numbers of farmers in the country, ranging from 37 million to 118 million according to the different definitions. According to FAO World Agriculture Statistics 2014, India is the world's largest producer of many fresh fruits such as bananas, mangoes, guavas, papayas, lemons and vegetables such as chickpeas, okra and milk, important spices such as chili, ginger and fibrous crops such as jute, staple foods such as millet and castor bean. India is the second largest producer of wheat and rice, the world's most important staple foods. India is currently the world's second largest producer of several dried fruits, agricultural textile commodities, root and tuber crops, legumes, farmed fish, eggs, coconut, sugar cane and numerous vegetables. So, according to the data given, these are the products that were grown. By retrieving data from the past, we can

simplify future farming with NLP. It is used to collect and store the past statistical information of culture data. With NLP and machine learning working together, we can easily retrieve the data in statistical form and learn to perform the tasks that are input by the users.

India was among the top five producers of over 80% of agricultural products in 2010, including many cash crops such as coffee and cotton, as well as commercial meat and poultry meat, with one of the fastest growth rates in 2011. A 2008 report claimed that India's population grow faster than its ability to produce rice and wheat. While other recent studies claim that if India can reduce spoilage/waste of staple foods, improve its infrastructure and increase agricultural productivity, India can easily feed its growing population and produce wheat and rice for global export.

Devastation of Food:

The major point that considered to the reason for devastation is food is uneven distribution of food between regions and different countries. We can state that there is always a bridge between production and consumption, but in agriculture there is an extended bridge between the producers and consumers. This disparity mainly takes place in African and Asian countries. The initial step in devastation of food starts in planting abundant amount of single crop and the consumer doesn't collect the planted in efficient way. When the crops are stored for long period without use by the consumers it will be rotten in few countable days. Despite of meals production, the UN has suggested that approximately one hundred ninety million Indians stay undernourished. It is in addition envisioned that the price of meals wastage in India is around ₹92,000 crores according to annum on an average, 18.7 kg of meals became disposed of via way of means of one Safal outlet every day. This indicates that an envisioned 7.five tonnes of meals is discarded every day throughout the four hundred Safal shops in Delhi. - Approximately 84.7% of the whole meals waste recorded became thrown withinside the bin, even as the relaxation became both fed to the negative or a few animals. - A massive part of the meals waste binned became nonetheless in safe to eat situation. - If the safe to eat meals waste generated via way of means of Safal is diverted, we estimate that it may feed at the least 2000 human beings every day. - Only 2 of the ten shops surveyed had been partly waste conscious, i.e., they separated the safe to eat from the inedible, and ensured that meals in consumable situation reached empty stomachs. One of them disposed their meals at noon, in order that it may be fed to the cow's withinside the area. The different claimed to offer away all safe to eat meals waste to the neighbourhood labourers and workers, for free, on the quilt of day.

Fig.2-This figure shows the average loss of crops and other diary products we waste. This is the place where India development is lagging beyond.
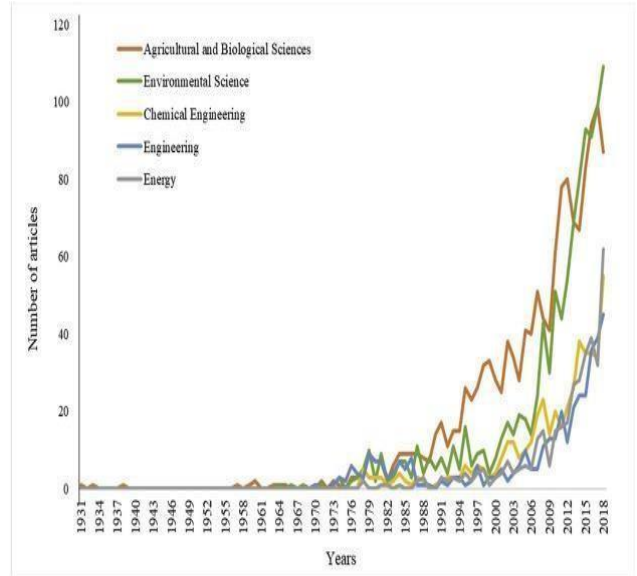

Fig 3-This graph denotes the loss of energy and food in different sectors

The agriculture industry has radically transformed over the past 50 years advances in machinery have expanded the scale ,speed and productivity of farm equipment, leading to more efficient cultivation of more land. Seed, irrigation and fertilizer also have vastly improved, helping farmers increase yields. The global population is projected to reach 9.7 Billion by 2050, which implies the demand for food will increase and the necessary resources for the agriculture sector such as water will further diminish. Furthermore, the agriculture sector also needs to face challenges such as climate change and increasing costs of labor and raw material. Block chain technology has various implications for improving agricultural sustainability. Unaltered information regarding ethical practices and carbon emissions can be accessible across the supply chain allowing transparency and trust. The value of blockchain technology in the agriculture sector is projected to increase in the future significantly, the researcher mainly concentrates on Technological Transformation and Progress of Agricultural Development in Gudiyattam Taluk of Vellore of Tamil Nadu in analytical perspectives.
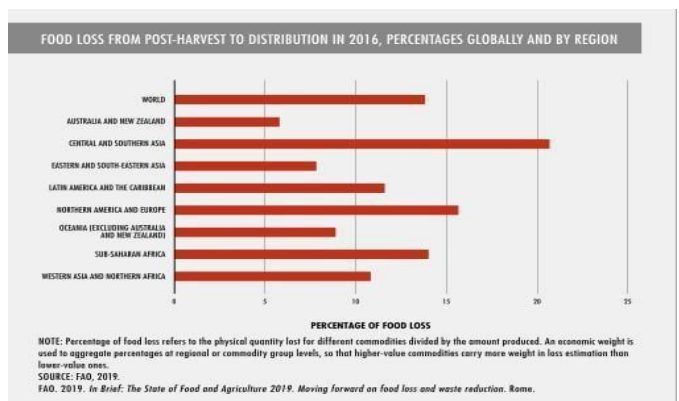
Here we are able to notify that the wastage is high in agro production when compared to other sectors.

Here is the core objective to resolve this major problem.

Core Objective:

Due to rise in population, need for livestock products is also rising a lot. The most important sector leads to Agriculture. Not only there is rise, there is also great lack of knowledge among the farmers how to cultivate the crops, which soil is best for the cultivation, under what climatic condition the crop grows well with greater yield. To overcome these kind of troubles faced by the farmers we use technologies based on machine learning and Natural Language Processing (NLP).

Even though the farmers domesticate excessive no of plants and yield a higher final results however the income is much less. This is why due to the fact farmer does now no longer produce the plants primarily based totally at the demand .Some of the crop production are over dumped, a few different merchandise are produced much less than the created demand. Here the farmers are unaware about the climate and soil circumstance, this brings hazard for greater crop production. Here we use main decipher to remedy this hassle is machine learning integrated with NLP.In this platform farmers can update the soil and climate circumstance of the cultivation region. Here farmers are categorized primarily based on these circumstance. This is performed by machine learning analytics. Farmer's information is analysed and categorized. After the farmers are categorized, the farmers can add their cultivated product into the platform .The particular visitor can go to the alternative producer's yield and might get concept what to be planted next. Farmers can update their records earlier what they goes to domesticate next. After updating all of the info, here machine learning enables in viewing the statistical analysed information via a pictured evaluation, after all of the evaluation the NLP will supply remark to the farmer what may be planted next, percentile of manufacturer's income. Here the humans can at once view the production fee via the statistical representaion.This is not unusual place for all production sectors. If manufacturer is capable of recognizing what the subsequent character is producing, its miles very smooth to examine and convey and might get a higher output. Right here ML and NLP enables in connecting massive setoff peoples who're unknown to every different. This offers a rational answer that is betterment for the producer and a consumer.

Result Development:

This scrutinize paper might deliver a higher gain in calculating the GDP In latest years agriculture quarter is going through its declination in GDP because of the shortage of era and the concept at the account of latest approach of cultivation. This is in particular visible within side the rural regions that have caused falling increase in agricultural quarter. By inducing the understanding approximately our concept to the farmers it'd be a more alleviation era associated issues. Not most effective this, farmers close by their surrounding can also additionally show up to plant equal kinds of vegetation of their discipline which can also additionally result in fallacious wages for their effort, ensuing in more loss for the farmers. Likewise in marketplace discipline greengrocers also are going through more loss with the aid of using the wastage of veggies and different vegetation because of considerable availability of vegetation, because of equal cultivation of vegetation of their region. By this each the farmers and the greengrocers face losses of their expenses. To those form of problems confronted the humans, the concept of bringing the farmers Together with the aid of using our software might assist them to benefit understanding approximately what their neighbour farmer plants, in order that they will now no longer plant the equal of their region. By doing so, each the farmers might obtain more earnings and there may be no loss confronted with the aid of using them. If the farmers produces unique varieties of vegetation withinside the equal region, the greengrocer will even get

earnings, because of this there may be no equal form of crop brought to them.

Future Development:

Mostly the wastage of the vegetation will even lessen progressively ensuing in no wastage of farmer's manufacturing. This software will even offer farmers approximately their beyond manufacturing rate, earnings, loss, and what to be completed subsequent to conquer at some point of the instances of crises. This additionally lets in farmers to view different farmer's crop cultivation type. This concept folks isn't most effective use for farmers. It may be extensively utilized globally with the aid of using unique varieties of sectors in order to be advanced soon, however proper now agriculture is the pass over critical quarter, so we focused extra on agriculture. Sooner the commercial quarter can also be integrated with era and entire manufacturing quarter could be operated in unmarried handset era. This interconnect all of the humans in and the various world. Conclusion:

By this scrutinize paper, we are able to finish that the meals wastage in India might be absolutely downed. Using the NLP we are able to hit upon the fake statistics the use of statistical data.NLP is beneficial in giving feedback primarily based totally at the customers enter of the manufacturer. When we're capable of understand the pastime of subsequent character none can prevent the intermediate boom of each character. NLP is utilized in spotting the speech of someone and the use of AI integrated with NLP can get end result of the enter. Even the blind manufacturer can realize the sector the use of speech popularity technique. Based on the same seek behaviour or customers cause so the common character unearths what they want without being a seek time period wizard. Before the manufacturer seek the want, this NLP might supply a end result what he's anticipating to look in more than one language primarily based totally on customers linguistic.

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