

Cognitive Analysis of Data in Business Analytics

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ABSTRACT:

Many businesses take up artificial intelligence (AI) technology to try to reduce operational costs, increase efficiency, grow revenue and improve customer experience. For the greatest benefits, businesses should look at keeping the whole range of smart technologies which includes Natural Language Processing, Machine Learning and more for their processes and products. Though the contemporary businesses that are relatively uncommon to Artificial Intelligence can reap major rewards.

KEYWORDS: Operational Costs, Smart Technologies, Machine Learning, Natural Language Processing, Reaping Major Rewards.

I. INTRODUCTION

Analysing the data plays a vital role in Business organisation. There are several Techniques to analyse the data such as 1.Descriptive Analytics 2.Diagnostic Analytics 3.Predictive Analytics 4.Prescriptive Analytics 5.Cognitive Analytics. Descriptive Analytics mainly focuses on analysis of past data whereas Diagnostic Analytics investigates the past data driven decisions. Predictive Analysis mainly focuses on forecasting outcomes at granular level. Prescriptive Analysis suggests all possible decisions to yield an optimum result. Cognitive Analytics is an advanced method which comprises Artificial intelligence, machine learning and Deep learning which mimic a human brain to automate the machine in making the decisions in the Business organization.

[1].Descriptive Analytics model is also known as Business Intelligence it uses data aggregation and Data mining techniques such as Characterization and Discrimination, Frequent pattern mining, Association rule mining, Cluster analysis, outlier analysis, Evolution analysis, etc.

[2].Predictive mining model is also known as Forecasting model which Perform inference on the current data in order to make predictions. Usually any Predictive analysis helps and changes the data from unconstructed data to useful aidable information which in turn can be used in forecast techniques and statistical models to comprehend,

predict the future and answer the recurring question, I.e. What could happen. This's done using copious techniques such as, 1. Classification 2. Regression, 3. Times series analysis, 4. Prediction.

[3].Prescriptive is also known as Optimization and Simulation. In this, analytics goes beyond predicting future outcomes by also suggesting actions to benefit from the predictions. Analytics which is prescriptive doesn't just predict the question of what might happen and when it can happen, but we can also see why it might occur, this is done by the usage of simulation and positive usage of algorithms to advising the predictive outcomes and answering, This answers the prevailing question of 'What should we possibly do? For the precise outcome.

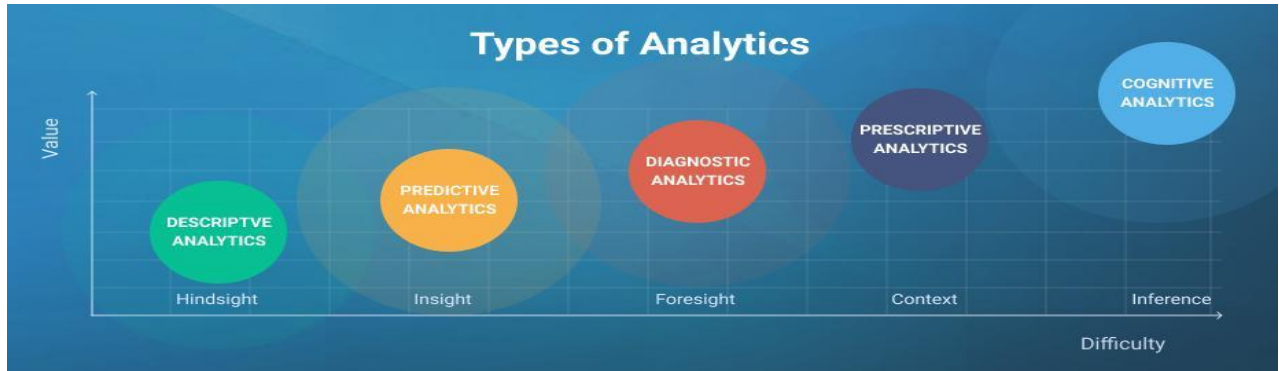
[4]. Cognitive Analytics is an intelligent technology that covers multiple analytical techniques to analyze large data sets and give structure to the unstructured data. Analytics which is cognitive repeatedly makes the usage of algorithms which are artificial intelligence and machine learning, which Cognitive analytics often uses artificial intelligence algorithms and machine learning, allowing a cognitive application to improve over time. An institution or an organisational firm may with the aid of cognitive analytics look over their end user emerging trends and behaviour patterns. Through this, the institution can see through future predictions and plan the outcomes and objectives according to the same analysis to improve their performance.

[5]. A cognitive system can create competitive advantage to business, providing real-time answers with the ability to search through massive amounts of information and making sense of context, and computing the most likely answer. The interests and benefits are seen, which open a number of opportunities to excavate unexploited data sources, which provide exceedingly rewarding and one to one services, improving service efficiency and effectiveness. These in return increase the consistency and enhance the amplification of comprehension which is shareable. Artificial Intelligence, Machine Learning, Deep Learning, are some techniques which are used by the human kind to apply to the machines and make

them as competent and intelligent as the human brain in creating data driven firms. The outgrowing enhancement in the cognitive world is giving out great results with certain limitations, the continued

prolonged research in this particular field would increase the accuracy and certainties would decrease. Cognitive models on a business level are considered to make the profits skyrocket.

II. COGNITIVE SOLUTIONS



In real time, the measured pulse rates, sugar levels, oxygen levels, to pulse rates and also the sleeping patterns has always produced a valuable amount of data which helps the doctors and healthcare aspirants, workers to check on the patients and their health in real time. We can see that a particular Machine learning algorithm helps ascertain and determine the Retinal Images to Diagnosing Diabetic Retinopathy, and the other helps detect skin cancer and cancerous tumours. Nations across the globe and their Government Systems that take the help of Machine Learning give access to the government officials to make use of the numerous data before time in predicting Thar scenarios that may occur in the near future, this helps in adapting to the new scenarios on a timely basis. Machine Learning can aid the new age world in the betterment of Cybersecurity and Intelligence, enables operational readiness, supporting counterterrorism efforts, logistical management, reducing failure rates in various aspects, predicting maintenance of marketing and sales. Machine Learning is thoroughly revolutionizing the servicing market sector as we can see that a good lot of companies have triumphantly implemented both artificial intelligence and machine learning. This helps in increasing Customer Satisfaction by more than over 20%. Incidentally, Forbes a magazine that rates the services, as said that 57% of organisational firmly executives in esteemed positions profusely believe that the number of vital growth benefit of both the considered ailments, Machine Learning and Artificial Intelligence, will aid in increasing and effectimising the customer services and support. Social media and digitalised commerce uses Machine learning to analyse your search and buying history, which generates recommendations and

advertisements on other profitable purchasable items, this is based on your previous purchases and searches. Many notable analysts also say that the near future of the sector of retail management will be completely controlled by Artificial Intelligence and Machine Learning as systems become more habituated to the shopping habits and experiences of individual shoppers which target marketing campaigns. Artificial Intelligence and Machine learning pragmatic projects have a proficient percentage of abilities that go in for assisting the fabrication of such smart records Machine learning projects make with the help of recognition of Handwriting technologies and vision APIs from Google Services and MATLAB. Efficiency of transportation, accuracy are the main reasons for profitability within a particular sector, So is the ability to predict and mitigate potential problems. Machine learning's functions of data analysis and Madeline tell precisely the business within the public transportations, business freight sectors of transport. This is done using various algorithms to help in finding the factors that optimistically and negatively change a supply chain's prediction of success in critical components within the management of supply chain.

Through this thoroughly developed article, I'm going to foresee some more real life actualities of Artificial Intelligence in businesses, In discrete generic world, we can categorise all of these into two types of end users or customers, those are; Benefited customers with smart and reliable products, Improvisation of organisational operations, Smart Assistants to name Alexa and Sir, Help desk chat bots, Facial Recognition technicalities enabled by platforms like Facebook, Amazon and netflix generating personalised recommendations to their potential customers with

subscriptions, Robot vacuums like the Roomba. These compact looking vacuum cleaners use advanced Artificial Intelligence to scan the commodities and directions in a room. Twitter, the widely used social networking with users across the world, uses Artificial Intelligence to detect hate speech, illegal, copyrighted content and fake news. The same mentioned way Facebook uses these advanced mechanisms of Artificial Intelligence to eradicate social abuse and cyber crime. Artificial Intelligence also promises to open up financial planning to the population across world nations. Risk prediction platforms like KenSci's take the aid

IMPLEMENTATION

As part of my work, I have done work on Pokémon Data Analysis.

The dataset consists of 11 columns and their respective description is as follows:

Pokemonid_Number: This column represents id of each Pokémon.
Name: This column represents the name of the Pokémon.
Type 1: This column represents the property of a Pokémon.
Type 2: This column represents the extended property of the same Pokémon. A Pokémon may be one or both the types. For an instance, Charmander is a Fire type, while Bulbasaur is both a Grass type as well as a Poison type. With the current 18-type system, there are 324 possible ways to assign these types to Pokémon, along with 171 unique combinations. Total of 133 divergent type combinations have been used.
Total: This column represents the sum of all character points of a Pokémon (HP, Attack, Defense, Sp. Atk, Sp. Def, and Speed).
HP (Hit Points): This column represents Pokémon Hit Points, which is a value that determines how much damage a Pokémon can receive. When a Pokémon's HP is down to '0', the Pokémon will faint. HP is the most frequently affected stat of them all, as a depleting HP is a key factor in winning a battle.
Attack: This column represents the Attack stat.
Defense: This column represents the Defense stat.
Sp. Atk: This column represents a Pokémon's Special Attack stat.
Sp. Def: This column represents a Pokémon's Special Defense stat.
Speed: This column represents the speed stat of a Pokémon.

CREATION OF TABLE:- create table pokemon(pid int,name string,type1 string, type2 string,total int,hp int,attack int,defense int,sp_attack int,sp_defense int,speed int) row format delimited fields terminated by ',';

of Artificial Intelligence techniques to help detect fraud based Health related claims. Food chains like Dominos are trailblazing Starship Technologies automated in Delivery Robotic services in the country of Germany. The tech giant, IBM's Chef Watson Tool in return takes the help of Artificial Intelligence to help food chains and restaurants write and generate recipes by giving them innovative combinations of spices. Burberry generates loyalty programmes and captures their customers, enabling data helping them to have a more personalised shopping experience.

Load data in path
'/user/cloudera/project1/Pokemon.csv' overwrite into table pokemon;

SOLUTIONS:-

1.) Find out the average HP (Hit points) of all the Pokémon, using the below query.

Command Used:- select avg(hp) from pokemon;

2.) Create and insert values of existing table 'pokemon' into a new table 'pokemon1', with an additional column 'power_rate' to find the count of 'powerful' and 'moderate' from the table 'pokemon1'. Now, based on the average hit points, we will create another column called 'power rate'. In order to segregate the Pokémon, we will use if condition inside the select statement, which will create one more column in our dataset. The if condition should be used in the following manner inside a Hive query.

Commands Used:- create table pokemon1 as

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select *,if(hp>69.25875,'Powerful',(if  
hp<69.25875,'Moderate','Powerless'));
```

Select count(name),power-rate from pokemon1 group by power_rate;

3.) Find out the top 10 Pokémon according to their HP.

Command Used:- select name,hp from pokemon order by hp desc limit 10;

4.) Find out the top 10 Pokémon based on their Attack stat.

Command Used:- select name,attack from pokemon order by attack desc limit 10;

5.) Find out the top 10 Pokémon based on their Defense stat.

Command Used:- select name,defense from pokemon order by defense desc limit 10;

6.) Find out the top 10 Pokémon based on their total power.

Command Used:- select name,total from pokemon order by total desc limit 10;

- 7.) Find out the top 10 Pokémons having a drastic change.
- .Command Used:- select name,(attack-sp_attack) as attack_diff from pokemon order by attack_diff desc limit 10;
- 8.) Find out the top 10 Pokémons having a drastic change in their defense and sp.defense.

- Command Used:- select name,(defense-sp_defense) as defence_diff from pokemon order by defence_diff desc limit 10;
- 9.) Find out the top 10 fastest Pokémons.
 - Command Used:- select name,speed from pokemon order by speed desc limit 10;

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hive> select name,speed from pokemon order by speed desc limit 10;
Query ID = cloudera_20180604104141_e80eacbd-20b4-437f-84ba-15159e5ddb92
Total jobs = 1
Launching Job 1 out of 1
Number of reduce tasks determined at compile time: 1
In order to change the average load for a reducer (in bytes):
  set hive.exec.reducers.bytes.per.reducer=<number>
In order to limit the maximum number of reducers:
  set hive.exec.reducers.max=<number>
In order to set a constant number of reducers:
  set mapreduce.job.reduces=<number>
Starting Job = job_1528129508009_0010, Tracking URL = http://quickstart.cloudera:8088/proxy/application_1528129508009_0010/
Kill Command = /usr/lib/hadoop/bin/hadoop job -kill job_1528129508009_0010
Hadoop job information for Stage-1: number of mappers: 1; number of reducers: 1
2018-06-04 10:42:09,110 Stage-1 map = 100%, reduce = 0%, Cumulative CPU 4.0 sec
2018-06-04 10:42:09,099 Stage-1 map = 100%, reduce = 100%, Cumulative CPU 9.50 sec
MapReduce Total cumulative CPU time: 9 seconds 500 msec
Ended Job = job_1528129508009_0010
MapReduce Jobs Launched:
Stage-Stage-1: Map: 1 Reduce: 1 Cumulative CPU: 9.56 sec HDFS Read: 45325 HDFS Write: 215 SUCCESS
Total MapReduce CPU Time Spent: 9 seconds 500 msec
OK
DeoxysSpeed Forme 180
Ninjask 100
AerodactylMega Aerodactyl 150
DeoxysAttack Forme 150
DeoxysNormal Forme 150
AlakazamMega Alakazam 150
BeedrillMega Beedrill 145
Accelgor 145
ScraftyMega Scrafty 145
Electrode 140
Time taken: 80.133 seconds, Fetched: 10 row(s)
hive>

```

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hive> select name,(attack-sp_attack) as attack_diff from pokemon order by attack_diff desc limit 10;
Query ID = cloudera_20180604103434_5ad282fb-5f5d-4ab2-bb28-0e8dc4a1f31c
Total jobs = 1
Launching Job 1 out of 1
Number of reduce tasks determined at compile time: 1
In order to change the average load for a reducer (in bytes):
  set hive.exec.reducers.bytes.per.reducer=<number>
In order to limit the maximum number of reducers:
  set hive.exec.reducers.max=<number>
In order to set a constant number of reducers:
  set mapreduce.job.reduces=<number>
Starting Job = job_1528129508009_0008, Tracking URL = http://quickstart.cloudera:8088/proxy/application_1528129508009_0008/
Kill Command = /usr/lib/hadoop/bin/hadoop job -kill job_1528129508009_0008
Hadoop job information for Stage-1: number of mappers: 1; number of reducers: 1
2018-06-04 10:34:39,279 Stage-1 map = 0%, reduce = 0%
2018-06-04 10:35:05,955 Stage-1 map = 100%, reduce = 0%, Cumulative CPU 5.42 sec
2018-06-04 10:35:34,327 Stage-1 map = 100%, reduce = 100%, Cumulative CPU 10.43 sec
MapReduce Total cumulative CPU time: 10 seconds 430 msec
Ended Job = job_1528129508009_0008
MapReduce Jobs Launched:
Stage-Stage-1: Map: 1 Reduce: 1 Cumulative CPU: 10.43 sec HDFS Read: 46453 HDFS Write: 185 SUCCESS
Total MapReduce CPU Time Spent: 10 seconds 430 msec
OK
HeracrossMega Heracross 145
BeedrillMega Beedrill 135
DarmanitanStandard Mode 110
GalladeMega Gallade 100
Rampardos 100
Sawk 95
Cranidos 95
PinsirMega Pinsir 90
Haxorus 87
Excadrill 85
Time taken: 88.566 seconds, Fetched: 10 row(s)
hive>

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III. CONCLUSION

Artificial Intelligence and Machine Learning supplements the both of them through the future quantum leap that may lay not just enabling to push both of them but it also aids in combining the two. The artificial intelligence and machine learning algorithms should help the recomposable, retainable modeling of reasonable computation and facilitate the interaction with acclaiming the ESE models with the correct level of communication and abstraction. Through different levels of punctualities and researching aspects need to come together to enable these advancements, which can be used with the computation of the regular language has the ability to help increase the progression of probing areas and incurring information that is tough for the humankind to procure.

Through this, we can conclude that Artificial Intelligence and Machine Learning, this's

a vital facet of Big Data Analytics which enables and welcomes Foundational and applied papers through recreational studies from narrow topics with a wider range. We can say that Artificial Intelligence and Machine Learning have an interplay. It will aid the foster action of scholastic interactions of the effects of the attributes acquiring a precise standpoint on the acquired results. With the aid of customary language of computation, we can completely comprehend how to attain behaviour of intelligence in machinery.

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