Exploitation of Big Data for Individual in Agriculture

Tarun Kumar[1]
[1]Department of Computer Science & Engineering,
Ganga Institute of Technology and Management
Kablana, Jhajjar.

Big data means huge amount of data both structured and unstructured data. It is used to describe the exponential development and accessibility of data. Many exploit of big data are science, engineering, agriculture, healthcare, business and education etc. The agriculture system traditionally has been generating huge amounts of data, determined by record maintenance, regulatory necessities, and peasant. In this paper, we describe how we will exploit big data for personalized digital agriculture and many other activities. We take an illustration, perceptive the benefit of big data in Indian agriculture. So a model can be developed to indicate peasants and individuals about advantage of new agriculture techniques, varieties of seeds, insecticide, and new method of showing seeds according to weather forecasting based on previous data (Big data).

Keywords: Big data, Agriculture.

I. INTRODUCTION

What is Big Data, and how do we use it? Simply put, Big Data is data that, by virtue of its Velocity, Volume, or Variety [and Veracity: the four V's of Big Data], cannot be easily stored or analyzed with traditional methods (Techniques and Concepts of Big Data). Analytics is a helpful tool to extract knowledge from Big Data, i.e. to gain insights from data and make decisions by applying analytical methods from mathematics, statistics, data mining, machine learning, etc.

Big data define as huge volumes of variable and complex data that need sophisticated technologies and techniques enable to keep, storage, allocation, management and analysis of the information. Big data can be stored, acquired, processed, and analyzed in several ways [4]. The source of every big data has different characteristics, such as frequency, volume; velocity, type, and veracity of the data as well as additional extent come into play, such as security, policies and governance [10]. The characteristics of this data, joined with complexity of analysis, and commercial imperative to create value from it, have led to a new class of technologies and tools. In big data three types of activities are handled:

Store- We stores all types of data.
Process- In processing, we cleanse, enhance, analyze, translate, or run algorithms, analytics, or otherwise against the data.
Query- In query, we search the data.
Big data can be measured in different dimensions. The world of Big Data is defined by the four "V"s.

Volume: Volume refers to the size of the data or amount of the data. Defining big data volume in order of ascending magnitude: kilobyte, megabyte, gigabyte, terabyte, petabyte, Exabyte, zitta byte, and yotta byte [7]. It is the job of Big Data to convert low-density data (data of unknown value), into high-density data (data that has value), such as clicks on a web page, twitter data feeds, and network traffic.

Velocity: Velocity is the speed at which data pour in and how frequently it changes. This involves flow of data, structured record creation and ease of use for access and delivery. Velocity means how fast data is being generated and how fast data must be produced to meet demand.

Variety: Variety describes whether data is structured, unstructured and semi structured. It is the combination of the relational data, text, images, audio, log files, video, tabular data, hierarchical data, email and more. There are more types of information to analyze mainly coming from social media and mobile.

Veracity: Veracity is the data that is being stored, and extract significant to the problem being analyzed. Veracity is just "accuracy" and "truthfulness." In fact, it's the only thing that matter when you want to actually DO something with all that data you collected.

Agriculture: the science or practice of farming, including cultivation of the soil for the growing of crops and the rearing of animals to provide food, wool, and other products.

Agriculture is the cultivation of animal, medicinal plants and other products used to sustain and enhance human life. Agriculture was the key development in the rise of secondary human civilization, whereby farming of domesticated species created food surpluses that nurtured the development of civilization. The study of agriculture is known as agriculture science.

The history of agriculture dates back thousands of years, and its development has been driven and defined by greatly different climates, cultures, and technologies. Industrial agriculture based on large-scale monoculture farming has become the dominant agriculture methodology

II. BIG DATA IN AGRICULTURE

Agro-produce includes crop, horticulture, livestock and fisheries. Complex data and crop health variability are classic examples of Big Data sources. Agriculture is

affected by various factors including soil, climate, seed, cultivation practices, irrigation facilities, fertilizers, pesticides, weeds, harvesting, post harvesting techniques, etc. Agricultural companies, governments, organizations, researchers (from academia and industry) generate, maintain and use huge amount of data related to agricultural production, weather and climate, insurance, marketing, supply chain, packaging, distribution, etc. Big Data has been providing a useful tool 'to ensure that each year we are improving our production plan. Small increases in adopting change on the farm can lead to significant long term success […] Every producer enters spring with the best plan for their farm based on the information they have available […] Increase value derived from traditional on-farm data sources: leverage knowledge from planting, fertility, and yield maps to make better input decisions' (Big Data in Agriculture).Arguably, farming has been empirically driven for over a century but the data collected was not digital. Agriculture Canada's family of research centres (circa 1920s) meticulously accounted for wheat yields across farms and weather patterns in order to increase efficiency in production. Big Data is different from this historic information gathering in terms of the volume and the analytical potential embedded in contemporary digital technologies. Big Data proponents promise a level of precision, information storage, processing and analysing that was previously impossible due to technological limitation

III. RELATED WORK

Kelly Bronson, Irena Knezevic describe the big data with food and agriculture with four V-challenges of big data.
They used semantic perception for volume, continuous semantics for velocity, and experience for variety, domain specific knowledge to describe personalized and actionable information will need to utilize metadata
Problem Definition: Now a day whole world suffers from lack of knowledge about modern techniques and previous result of applying new techniques of agriculture. So there is need to aware individual as well as agriculture scientists about modern techniques and new equipments and how these techniques and equipments are useful to increase productivity and how to cure our crops against insects and different weather conditions.

IV. PROPOSED WORK

This paper will describe the benefits of new techniques and new equipments that we can develop a model by which we can identify our soil condition (which crop will produce better result according to current soil condition). We can develop an application for mobile user using result derived by big data. This application will help our farmers about sowing crop as per the weather, watering and subjected yield. Using this app user can know. As we will show, smart data that gives such personalized and actionable information will need to utilize metadata, use domain specific knowledge, employ semantic and intelligent processing? We will motivate the need for a synergistic combination of techniques. For volume, we will discuss the concept of sampling, that is, how to convert huge amount of data into information, it's meaning and useful for human decision making. In Figure.1 first we collect the huge amount of data related to previous result, and then apply sampling (probability/ non probability). Sampling measures the size of data and provides analyzed information. For variety: We will discuss experience in using agreement represented in the form of theory of existence, peoples talk or review, or vocabularies to support semantic interoperability and integration. For velocity: we will discuss persist semantic in which first create the model of new object, its concepts and relationship among these objects.

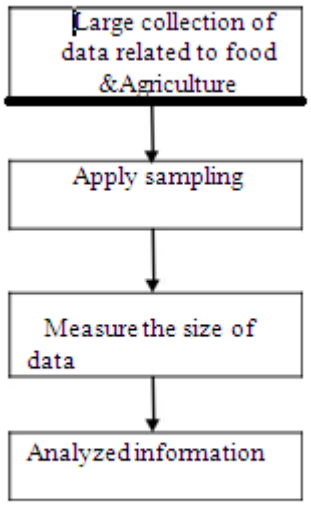

Figure 1: Sampling Steps

With the help of persist semantic, better indication in the data that capture previous result by applying new technologies.

V. CONCLUSION

We conclude with this paper what is the use of big data in agriculture. The conclusion of this paper is that we can develop a model which can be helpful for individual, data scientist of agriculture and professor of agriculture universities to aware them about how to improve our farming using new technologies, how we can protect our crops from insect and bad weather conditions and how to prevent the spreading of these insects with V challenges of big data.

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