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Recommendation for Selecting Smart Village in India through Opinion Mining Using Big Data Analytics

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***Abstract*—** In India, most of the people are staying in below poverty line. Nowadays, village people are also most inadequate with mobile phones. To develop this village as smart, we emphasize on different factors like agriculture, employment, nutrition security, environment, natural resource utilization, and conservation, etc. We select smart village based on collection of different opinion from village people in terms of forms, questionnaire, views and surveys, etc. Opinion mining extracts useful knowledge about village from ample of opinions. This mining process gives us a right direction for creating smart village. In this paper, we are trying to create digitalized village which is basically an application of Information and Communications Technology to define the major function of Government in order to bring about Small, Moral, Accurate, Reliable and Transparent. To get accurate response, we use big data analytic concept after mining opinions using map reduce approach. Keywords Big data analytics Map reduce Opinion mining Smart village.

Keras Dataset keras dataset module provides a few toy datasets (already-vectorized, in Numpy format) that can be used for debugging a model or creating simple code examples. If you are looking for larger & more useful ready-to-use datasets, take a look at Tensor Flow Datasets.

Keywords: Keras dataset, Map reduce, Opinion mining, smart village.

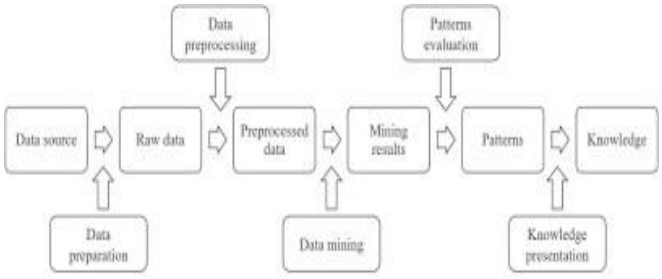
emotions toward a particular topic by doing questionnaire, forms, discussion panel, etc. [2]. Here opinion mining can be applied on villagers to get their opinions and views. These views collected from people are normally made in an unstructured way. To make it as structured, we need map reduce approach which can be applied on a huge amount ofcollected data called big data from people in Hadoop environment. Hadoop is an open-source framework that allows to store and process big data in a distributed environment using map reduce approach. Hadoop Distributed File System (HDFS) is associated with Hadoop which is purely based on Java. Hadoop automatically indexes the file, breaks the file into blocks and stores it in different nodes. After storing in HDFS, it requires map reduce approach for processing [3]. Our job is to easily get valuable people's opinion which corresponds to basic criteria of smart village development for making digital India. This paper summarizes the followings: Sect. 2 describes related work which tells about basic criteria for establishing smart village and basic concepts of opinion mining and big data analytics. Section 3 tells how to select a village as smart village by opinion mining using map reduce approach. Section 4 explains implementation of proposed method to satisfy our problem statement. Section 5 shows experimental analysis and results. Section 6 presents conclusion.

I. INTRODUCTION

In India, maximum people are living below the poverty line. To develop the culture of that village, we should look positively into some parameters such as education, agriculture, environment, road development, natural resource management like water preservation and soil preservation, etc. In spite of India is a developing country, nowadays most of the villagers are using digital devices like mobile phone, computer, calculator, and television, etc. But 40% people in India are extremely poor. Now India Government has declared that 2500 number of smart villages will be developed by 2019 under the Saansad Adarsh Gram Yojana (SAGY) scheme. The main objective of building smart village is to bring benefits to villagers in all fields and to solve migration problem. Develop smart village concept can increase entrepreneurship in the villages. This program can focus on proper resource utilization, empowered local self-governance, access to assured basic amenities, and responsible individual and community behavior to build a vibrant and happy society in villages [1]. In this paper, we are going to choose the village to be developed as SMART. So, at first, we have to do survey in different villages through opinion mining. Opinion mining is the field of study which helps to collect people's opinion, sentiments, appraisals, attitudes, evaluations, and

LITERATURE REVIEW

1) Rutuja Somwanshi & et.al. (2021) they study the project report deals with study and development of smart village. Smart village is one of the energy access acts as a catalyst for development in education, health, security, productive enterprise, environment that in turns support further improvement in energy access. This report focuses on improved resource use efficiency, local self-governance, access to assure basic amenities and responsible individual and community behavior to build happy society. Smart village by taking smart decisions using smart technologies and services.



2) Dr. C. Grace Indira and V. Anupama (2021) Explain besides smart cities, it is necessary for us to have smart village for, sustainable and inclusive future of emerging India. Smart villages are the need of the hour as development is needed for both rural and urban areas for improved livelihood. The impulsive motive behind the concept 'smart village' is that the technology. Now it's need of the hour is integrated planning, strategy, and above all monitoring and execution of the activities using proper governance models to work property for the real future of emerging India. They focuses on the key areas as vision and need for smart villages, approaches, government programs, technology used for smart villages, areas of interest in smart village and it outcomes expected.

3) Boda Ramesh (2021) Explains concept of smart village is the development of the village shall be based on the five path that is retrofitting, redevelopment, green fields, E-pan, livelihood, 69% of India lives in villages, if it is ignored, then it will hamper the economic growth of the country. Villages are backbone of our countries economic growth as most of the primary sector activities occur in villages. To explore new opportunities and dimensions for the rural population in other sectors will definitely boost the country growth. In that path smart village is an initiation through the concept of Rurbanization.

II. PROPOSED WORK

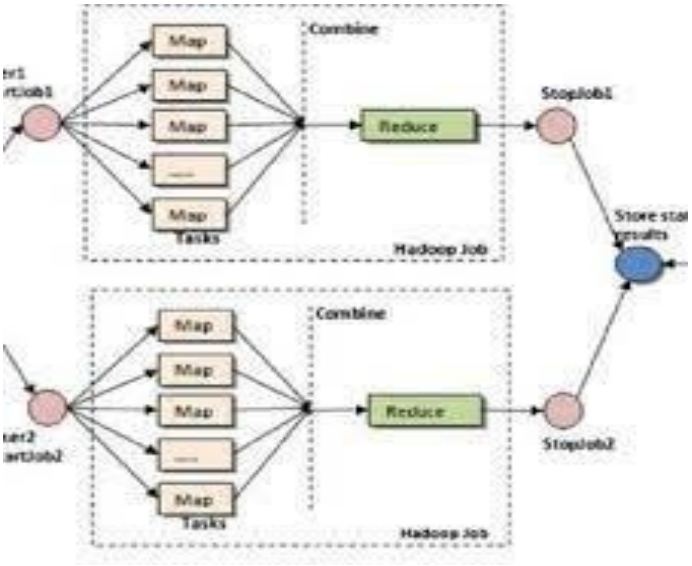
Data Science focuses on finding meaningful correlations between large datasets,

Data analytics is a process of analyzing raw datasets in order to derive a conclusion regarding the information they hold. Data analytics processes and techniques may use applications operating on machine learning algorithms, simulation, and automated system.

Data Mining Technologies for Village

In a smart city application, the production of analytics can lead to advanced insights, a better understanding of city phenomena, and supports the design of evidence-based urban strategies and innovation [53, 58]. Searching for interesting patterns and correlations [3] in the public- service facilities of developed cities using a DM approach has gradually become a significant area of research. The extracted patterns can be used to plan layouts or arrange new facilities in cities [59]. Advancements of big DM technologies can support, explore and discover environmental and societal changes, including how people go about their life,

Behavior, and preferences; social trends, and public opinion [45 , 60]. DM and ML are vital technologies for data-centric applications for smart cities. DM is a broad field that includes many algorithms and techniques from statistics to ML and information theory to extract information from data [57]. DM aims to build computer programs that extract hidden, previously unknown, and potentially valuable information from data [61]. The process must be automated or, more usually, semi- automated, and the regularities or patterns discovered must be meaningful in a practical sense [62]. Big DM needs to extend the entire process to the front and back end, under the characteristics of big data. This involves processing and analysis of massive and heterogeneous data, automatically discovering and extracting implicit, hidden patterns, rules, and knowledge, and visualizing them in an easily understandable form [45]. ML is the study of how to build computer programs that improve their performance at some tasks through experience [63] to address problems in which human expertise does not exist or when it is difficult to express it [64]. With this technology, the algorithm is training computers to learn from a past experience E regarding task T and some performance measure P, if its performance improves on task T, with experience E, computed by P [62].Essentially, ML is an application of AI that provides computers with the ability to learn from data and provide relevant insights that increase operational performance from experience from data without being programmed [65]. According to Din et al. [66], ML is classified into four categories: supervised learning, unsupervised learning, semi-supervised learning, and active learning [62]. Nef et al. [67] propose a typical ML pipeline (Figure 4) that starts with the raw data as input, clustering to further preprocess the data before the actual classification is performed. Finally, the computed results are displayed.



Data Analytics Using the Python Library, NumPy

1. Create a NumPy array.
2. Access and manipulate elements in the array.
3. Create a 2-dimensional array and check the shapeof the array.
4. Access elements from the 2D array using indexpositions.
5. Create an array of type string

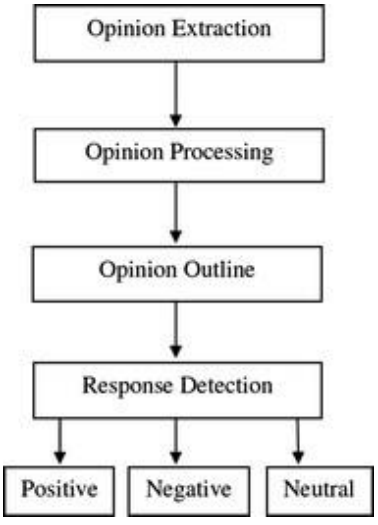
OBJECTIVE

1) Data sets generation from good form in CSV format
2) Using GUI import datasets in system
3) Analysis the village growth and smart city parametersbased data sets
4) Graphical representation of output

Regression- In regression analysis, you usually consider some phenomenon of interest and have a number of observations. Each observation has two or more features. Following the assumption that (at least) one of the features depends on the others, you try to establish a relation among them. Linear Regression When implementing linear regression of some dependent variable y on the set of independent variables $\mathbf{x} = (x_1 \dots x_r)$, where r is the number of predictors, you assume a linear relationship between y and $\mathbf{x}$: $y = \beta_0 + \beta_1 x_1 + \cdots + \beta_r x_r + \varepsilon$. This equation is the regression equation. β_0, $\beta_1 \dots \beta_r$ are the regression coeicients, and ε is the random error.

Under fitting and Over fitting Under fitting - occurs when a model can't accurately capture the dependencies among data, usually as a consequence of its own simplicity. It oen yields a low R^2 with known data and bad generalization

apabilities when applied with new data. Over fitting happens when a model learns both dependencies among data and random fluctuations. In other words, a model learns the existing data too well. Complex models, which have many features or terms, are oen prone to overfitting. When applied to known data, such models usually yield high R^2. However, they oen don't generalize well and have significantly lower R^2 when used with new data.



III. CONCLUSION

Smart villages became a necessity in current world development scenario. Smart villages are the need of the hour as development is needed for both rural and urban areas for better livelihood and technology will offer effective solution. Smart villages will not only reduce this migration but also irrigate the population flow from urban to rural area as well. Considering education and skill for vocations etc. to village can well channelize the energies of the youth as a powerful tool for the nation. An educated rural youth will be an asset to the country and at most the overall development of the country can be possible with the development of the villages only.

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