NATIONAL INSTITUTE OF TECHNOLOGY ROURKELA

A Research Report on

“Decision Support System For Voters Of Nepal”

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DECISION SUPPORT SYSTEM FOR VOTERS OF NEPAL

Abstract:

Election is a procedure where the people have a right to choose the leaders of their interest who can serve society for a period of years socially and politically in achieving their basic rights and needs for a better survival. Decision Support System (DSS) is a computer based information system which can help the common people to take the proper decision in utilizing the data and models to solve the problems that are unstructured and semi structured. In a country like Nepal where decision support system can play a vital role for effectively utilizing the democratic rights of the people in choosing the suitable and the qualified (socially, politically & technically) candidate for various nominations either during the central and state level elections or in the local elections as well as this system might be effective during the selection of candidates through voting in various business oriented organizations.

Keywords:

Machine Learning ,Decision Support System(DSS),Data Mining.

I. Introduction:

In Nepal the election commission of nepal (ECN) conducts Election in every 5 years to choose the peoples representive for law making and implementing sectors most oftenly called as the parliament member. The parliament members either from the centre or from the state level both are responsible for taking the issues of the general public to concerned authority.if people won't be able to select best candidate for the above mentioned post then they have to suffer a lot for the next few years for claiming their rights .the decision support system(DSS) will help the voters particularly the unawared people in identifying the suitable person for the post.this decision support system contains all the possible details regarding the educational qualification,contribution of the candidate in educational,health & infrastural development during his/her past tenures.people need not to search any information regarding the candidates .all the required details of the candidate will be available in the android application that can be installed in their own mobile phones which has been a important aspect of their daily needs.Data will be collected from various departments like department of education,health,transportation,administration and defence and these data will be stored in a central database system and it will be processed using various techniques of machine learning and data mining and finally the common people can simply gain the required information from the android application.

II.Literary Review:

The idea of decision support system(DSS) has evolved mainly from the theoretical studies of organizational decision making done at the Carnegie Institute of Technology during the late 1950s and early 1960s, and the implementation work done in the 1960s. According to Sol (1987) the definition and scope of DSS has been migrating over the years: in the 1970s DSS was

described as "a computer-based system to aid decision making"; in the late 1970s the DSS movement started focusing on "interactive computer-based systems which help decision-makers utilize data bases and models to solve ill-structured problems"; in the 1980s DSS should provide systems "using suitable and available technology to improve effectiveness of managerial and professional activities", and towards the end of 1980s DSS faced a new challenge towards the design of intelligent workstations. DSS also have a weak connection to the user interface paradigm of hypertext. Although hypertext researchers have generally been concerned with information overload, certain researchers, notably Douglas Engel Bart, have been focused on decision makers in particular.Though Decision support system for various aspects like organisations,commercial sites and many more are already designed but for the purpose of election management it has not been developed yet.our approach might be the first one for designing the Decision support system for voters of Nepal .

III.DSS Problem:

A decision support system (DSS) is an information system that supports business or organizational decision-making activities. DSSs serve the management, operations and planning levels of an organization (usually mid and higher management) and help people make decisions about problems that may be rapidly changing and not easily specified in advance—i.e. unstructured and semi-structured decision problems. Decision support systems can be either fully computerized or human-powered, or a combination of both. Sprague (1980) defines a properly termed DSS as follows:

1. DSS tends to be aimed at the less well structured, underspecified problem that upper level managers typically face;

2. DSS attempts to combine the use of models or analytic techniques with traditional data access and retrieval functions;
3. DSS specifically focuses on features which make them easy to use by non-computer-proficient people in an interactive mode
4. DSS emphasizes flexibility and adaptability to accommodate changes in the environment and the decision making approach of the user.

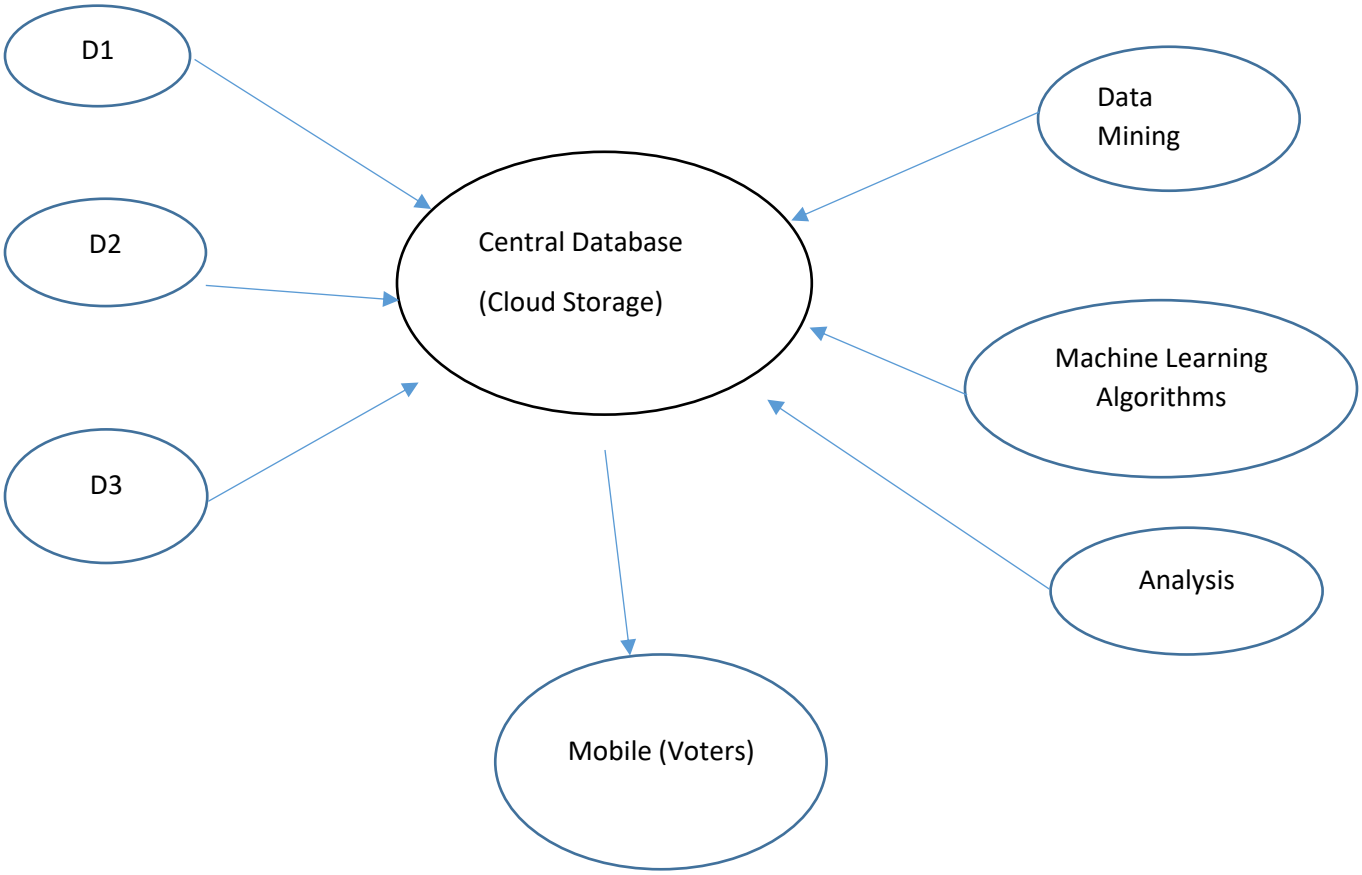

Fig: Flow of information

IV.Algorithms:

a. Machine Learning Algorithms:

Machine learning is an application of artificial intelligence (AI) that provides systems the ability to automatically learn and improve from experience without being explicitly programmed. Machine learning focuses on the development of computer programs that can access data and use it learn for themselves.

The process of learning begins with observations or data, such as examples, direct experience, or instruction, in order to look for patterns in data and make better decisions in the future based on the examples that we provide. The primary aim is to allow the computers learn automatically without human intervention or assistance and adjust actions accordingly.

Some machine learning methods

Machine learning algorithms are often categorized as supervised or unsupervised.

- **Supervised machine learning algorithms** can apply what has been learned in the past to new data using labeled examples to predict future events. Starting from the analysis of a known training dataset, the learning algorithm produces an inferred function to make predictions about the output values. The system is able to provide targets for any new input after sufficient training. The learning algorithm can also compare its output with the correct, intended output and find errors in order to modify the model accordingly.
- In contrast, **unsupervised machine learning algorithms** are used when the information used to train is neither classified nor labeled. Unsupervised learning studies how systems can infer a function to describe a hidden structure from unlabeled data. The

system doesn’t figure out the right output, but it explores the data and can draw inferences from datasets to describe hidden structures from unlabeled data.

- **Semi-supervised machine learning algorithms** fall somewhere in between supervised and unsupervised learning, since they use both labeled and unlabeled data for training – typically a small amount of labeled data and a large amount of unlabeled data. The systems that use this method are able to considerably improve learning accuracy. Usually, semi-supervised learning is chosen when the acquired labeled data requires skilled and relevant resources in order to train it / learn from it. Otherwise, acquiring unlabeled data generally doesn’t require additional resources.
- **Reinforcement machine learning algorithms** is a learning method that interacts with its environment by producing actions and discovers errors or rewards. Trial and error search and delayed reward are the most relevant characteristics of reinforcement learning. This method allows machines and software agents to automatically determine the ideal behavior within a specific context in order to maximize its performance. Simple reward feedback is required for the agent to learn which action is best; this is known as the reinforcement signal.

Machine learning enables analysis of massive quantities of data. While it generally delivers faster, more accurate results in order to identify profitable opportunities or dangerous risks, it may also require additional time and resources to train it properly. Combining machine learning with AI and cognitive technologies can make it even more effective in processing large volumes of information.

b. Data Mining:

Data mining is the process of analyzing hidden patterns of data according to different perspectives for categorization into useful

information, which is collected and assembled in common areas, such as data warehouses, for efficient analysis, data mining algorithms, facilitating business decision making and other information requirements to ultimately cut costs and increase revenue.Data mining is also known as data discovery and knowledge discovery.

The major steps involved in a data mining process are:

- Extract, transform and load data into a data warehouse
- Store and manage data in a multidimensional databases
- Provide data access to business analysts using application software
- Present analyzed data in easily understandable forms, such as graphs

V.Expected Outcome:

After implementing various machine learning algorithms and data mining techniques, it is expected to effectively manage the individual's data on a central database using cloud storage as there will be a huge collection of data from various departments .The android application will be developed which can extract the required data from the central database as per the users choice. The outcome of this project aims in helping people of Nepal to make their decision making effective and independent from various factors like favoritism and nepotism. Selection of proper candidate in any sort of election will be the major success of this project.

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Signature of the Supervisior

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THANK YOU !!!