

Cloud Based Smart Detecting Metering Terminal

Asst. Prof. C.Rekha, AkshayaPrabha P, Logeshwari S

Department of Information Technology,
Sri Sai Ram Institute of Technology,

Chennai, India

rekha.it@sairamit.edu.in i8it058@sairamtap.edu.in i8it092@sairamtap.edu.in

Abstract- Underground cables are inclined to a wide assortment of faults due to underground conditions, wear and tear, rodents etc. Diagnosing fault source is troublesome and entire cable need to be taken out from the ground to check and settle issues. The project work is pointing to recognize the region of fault in underground cable lines. To locate a fault in the cable, the cable must be tested for faults. The current would change depending upon the length of the fault of the cable. Within the urban regions, the electrical cables run in underground rather than overhead lines. When the fault happens in underground cable it is troublesome to recognize the exact zone of the fault for get ready of repairing that particular cable. The proposed framework finds the precise area of the fault and also electricity load forecasting is important for utility companies to ensure reliable power supplies. Traditional methods for load forecasting relied on historical records from one single data source and have limitations with insufficient or missing data and also when the fault happens in cable it is troublesome to recognize the exact zone of the fault for get ready of repairing that particular cable. Our project is to find solution for this.

Keywords- electrical cables , particular cable etc

I. INTRODUCTION

Utility companies need to estimate short-term household electrical loads in order to ensure stable power supplies. Traditional load forecasting approaches rely on historical records from a single data source, which has drawbacks due to limited or missing data. Appropriate modelling of relatedness to enable knowledge transfer between communities remains a difficulty.

The goal of our effort is to discover a solution to this problem. In the framework of a modern electric power measurement system, smart metering terminals (SMT) are routinely employed to collect data from electricity users. The application of SMT in the processing of massive electric big data creates favourable conditions for edge computing. For energy sales enterprises, short-term electric load forecasting is crucial, especially if the spot-price system is in place in power markets.

For effective and accurate load forecasting, all energy users' huge electric power consumption data should be collected and preprocessed in real time, and an efficient forecasting model is required.

In this study, the framework of a cloud based smart detecting metering terminal system is developed to widely collect electrical big data, reducing data transmission and cloud computing tasks. , at the same time get efficient load forecasting performance from from the attitude of electricity sale company also when the fault happens in cable it is troublesome to recognize the exact zone of the fault for get ready of repairing that particular cable.

II. LITERATURE SURVEY

Most of the smart energy monitoring system depends upon Blavier test. When ground blame happens in a single cable and there's no other cable, at that point blavier test can be performed to find the blame in a single cable but in our project we are detecting the exact location using DBN and LSTM Algorithms.

The TDR is an electronic instrument that employs time domain reflectometry to characterise and find flaws in metallic cables. The TDR transmits a low-energy signal across the cable that does not degrade the insulation. A hypothetically ideal connection will return that signal in a predictable time and profile. Impedance differences in a "real-world" cable change the time and profile, which is graphically represented on the TDR screen or printout. TDR has the disadvantage of not being able to pinpoint errors. To overcome these problems we propose a cloud based smart detecting metering terminal system .Our project work is pointing to recognize the region of fault in underground cable lines based on energy load.

III. PROPOSED SYSTEM

As the edge node in electric Internet of Things, the application of smart metering terminal (SMT) enables the massive electric big data to be widely collected and processed on the edge.

In the proposed framework, the distributed SMTs are regarded as the edge nodes and it widely collects electric data.

Then, these original data are preprocessed in the regional SMT, and then sent to the cloud server as standard time series data.

Accurate fault location restores power to the system, improves system performance, saves operating costs, and minimises the time it takes to find problems in the field are all the advantages of accurate fault location.

The dataset for our current study is collected from chennai (historical energy demand) and the University of Energy and Natural Resource (UENR) weather station and Ghana meteorological agency (the weather parameters); from January 2015 to December 2021.

The dataset includes the following features: air temperature and heat index (TEMP), barometric pressure (PB), humidity (H), precipitation (P), solar radiation (RD) and wind speed (WS) and direction and historical energy demand (LOAD). Two variables were considered, weather parameters as the independent variables while energy demand as the dependent variable.

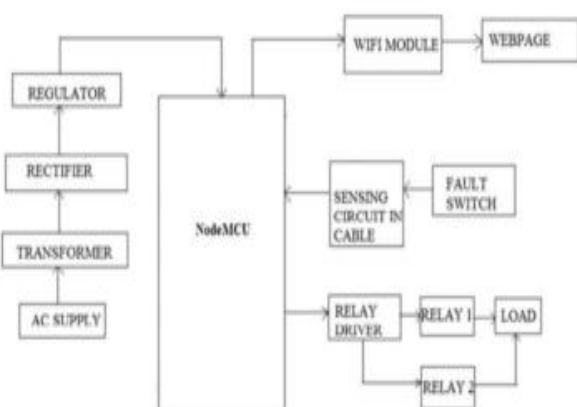


Fig 1. Proposed System.

The performance of a predictive model dramatically depends on the cleanliness of the data used. The combined dataset (DS) was treated in two phases, (i) data cleaning, which includes filling in missing values, smoothing noise, identification and removing of outliers where necessary and resolving data inconsistency. The average technique was used to compute a value for any missing value in DS. The results reveal that which month is of high importance. Thus, the outcome reveals that the number of holidays in a particular month has a partial effect on the amount of electrical energy demand by consumers. The results confirm the increase in energy demand in the month of January 2015 to December 2021.

It implies that the proposed predictive model can provide sufficient prediction of future energy demand in the chennai Region with a high accuracy level, which can help the management of electricity supply and whenever a

fault occurs in any cable the system finds the precise area of the fault.

IV. CONCLUSION

Prediction of future power consumption plays an essential role in power conservation and efficient power use. In our project, a predictive model established on DBN and LSTM algorithms was proposed for predicting the 30-day head electrical energy demand in the chennai Region of tamilnadu.

The model efficiently integrated the weather parameters in discovering the most influential factors affecting electrical load demand and gives prediction and analysis of the exact location if any fault occurs in cable based on load balance.

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