

Collaborative Filter Based EB Plan Recommendation System

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Abstract

All the equipments are running in the electricity. Without electricity we can't able to survive. As the population growth is go on increasing the consumption of the electricity is increasing. Now a day's the online web application is developed based upon the amount of electricity consumed the charges may get generated. The payment of the charged can made through the web portal of the EB office. The SQL is used which creates a data set it contains the data of the consumers but it has the limitations it has one set of column to return per group. But in the new system the SQL has the horizontal row set of data it stores multiple sets of data of the consumer. They can evaluate the charges based upon the consumption. It also made intimation when the use of the power consumption reaches the maximum range. So be aware of using the power in a minimal range. In the horizontal set of data it uses the PIVOT method to make the process more faster and accurate.

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1. Introduction

In day to day life we are using the electricity has the common thing. In home and in the industries all the application is run under the electricity. Nearly 80% of the electricity has been consumed by the domestic uses. The meters can reads the amounts of power get consumed every day. At the end of the month it shows the use of the total per. The electricity units whose price range get varied from range to range of the unit. The smart method are get implemented by using the renewable resource. The amount of power consumption can be reduced. Even through the use of the renewable source we can't able to totally avoid the power from the ED substation. The renewable source can't fully satisfy our need. These can act as the backup storage to supply the power. When the major electricity supply is cutoff. In current technology all the process several machines are get introduced. They reduces the man power and time and made the work more simple and easy. These machines are run under the

presence of the electricity. So the consumption of the electricity is more. The consumer did not periodically noted the meter box amount of power get being used day to day. This paper mainly shows the smart box in which it mainly noticed the amount of power get consumed day to day life. When the power range exceeded the threshold range it will send an intimation message to the consumer. The power reaches the maximum value if goes on increasing in this manner.

The electricity bill range will reach maximum value. This system can reduces the increase in the bill payment. The data of the power consumption can be monitored and stored in the data set. The SQL has the single column of data to be return per group system. The proposed method shows the design of the SQL which can returns the horizontal set of row in which several set of data s to be return for group. By this horizontal data system maximum amount of data can be stored in the set. As per the need the particular consumers data can be fetches by using the extraction method. The graphical representation

has also shown for the peak to peak value. The voltage level of the each device consumption can be shown in the screen. The various devices are used in measuring the power. The power which is the combination of both current and the voltage. The current can be measured using the ammeter and the voltage can be measured using the voltmeter. The power factor value is to maintained to 1 or less than 1 has the power factor gt increased the charge of the power consumption is also get increased. The data intimation is made simple in this system so the consumer can aware of the consumption of the electricity by which they can reduce the cost. This system can implemented is several countries. To determine the practical efficiency comparison has been with the graphical projection it gives the overall efficiency of about 82%.

2. Literature Survey

Lu, T. Sookoor, V. Srinivasanet., al., proposed to predict the electricity bill in advance by using the machine learning technique. The geographically distributed centers are act as the main cloud provider to the all surrounding areas. During the data transmission and receiving the cloud consumes huge amount of power. So the cost of the electricity bill increase to maximum level. To reduce the cost they directly contact to the electricity office to schedule the power rate at margin level. This can leads to some issues. So in this paper they proposes the use of the machine learning technique to predict the price of the electricity in advance so that the cloud provider and reduces the cost of the electricity. This system can provides broad way to the users who are using the cloud data. This advance prediction will intimate the users so that they uses the data in limited manner, based upon the requirements. The machine learning technique has plays a vital role in predicting and analyzing the data in advance manner [1].

R. Yang and M. W. Newmanet., al., proposed the risk in paying the electricity bill to the board of electricity in china. The imbalance data is obtained from the meter enterprise machine. From the data obtained the electricity bill is get generated based upon that. So there is the risk in bill paying situation is arises. To overcome this drawbacks SMOTE system is get implemented this can separate the data into two level of categorize the minor level and the major level. According to that the data is get separated. This data can be compared with the other data and it get combined together which is then upload in the server. In this server part using the random forest system the payment can be generated exactly according to the power consumed by the individuals. The random forest technique can involves a major role. The combination of both SMOTE and the random forest can provides better outcome without increasing or decreasing the electricity bill based upon the amount power they consumed the payment has been provided [2].

D. Chen, S. Barkeret., al., proposed how to reduce the cost of the electricity billing. The electricity bill is not

remains a constant for the whole period based upon the usage and the level of units varied the price also differ. If the units get goes above 100 the price will be in some range when the unit crossed above the 200 or 180 the price will be in another range. So the cost will get increased. In this paper they propose the use of the smart charging system is introduced. Use of some of the renewable resources and make stored it in the battery. The battery is get connected in the gird when the normal reaches some unit it will intimate we can changed the grid supply to the battery. The system can provides a smart charging way to conserve the energy in the smartest way. The energy can be available continuously from the battery. During the period of shut down the battery stored energy is get supplied to the grid. This system shows the domestic user can save nearly 70% of the amount around the total billing, The energy can be saved around 30-40% of the total power they required. The data of power consumption is get stored in the set, the analyze result is get compared with the real time scenario to predict the exact result. It also shows that same result they predicted in the graphical [3].

W. Kleiminger and C. Beckelet., al., proposed high performance grid system is used which shows the use of the electricity with reduced cost. The electricity bill computing system is get implemented in this paper by the use of the meta scheduling algorithm. Machine learning concept is get implemented by use of the algorithm. The major and the minor part is get separated in this system. Tabulation is made for the each stages of the power get consumed day by day. By predicting the data from the table this algorithm can shows for this day nearly 10% of power is get consumed and the cost of the power is in the range. For a certain period this process get continues. When a particular level reached it will sends a message if this conditions goes on increasing the bill range will leads to these value. Based upon the prediction the consumption of the power is get controlled. This system will helps to the low range people and the domestic user. This data can be compared with the other data and it get combined together which is then upload in the server. In this server part using the random forest system the payment can be generated exactly according to the power consumed by the individuals. The system can provides a smart charging way to conserve the energy in the smartest way. The energy can be available continuously from the battery. During the period of shut down the battery stored energy is get supplied to the grid. This system shows the domestic user can save nearly 90% of the amount around the total billing, The energy can be saved around 35% of the total power they required [4].

K. Wilhelm, B. Christian et., al., proposed as the population is goes on increasing the demand of the power is also get increased. The production of the power form the various natural resources does not satisfy all of them, still there is the need of the energy sources. The industries and the corporate is get increased the power demand is also get increased. The power consumption increased the bill is also get increased with the amount of power

consumption. To avoid the over use of the power in the domestic and industries we have to monitor all the device connected to the power source. The manual monitoring is not possible so the smart plug method is get implemented in this system. This method consists of the raspberry pi, arduino, wifi module it will get connected to all the devices. These devices can sends the amount of power consumed at each period to the web site. The website for the power conservation is designed we want to login to the web site and able to analyze the amount of power is get consumed by each device. When the power consumed value reaches the threshold range it will sends a intimation message to the mobile. Through which we can able to avoid the increasing in electricity bill [5].

K. Wilhelmet., al., proposed the use of the smart meters. The smart meters can monitored the use of the power regularly day by day. The smart meter can limit the excess use of the power by each devices. To avoid the excess use of the power in this paper we proposes the smart meter which mainly works on the logistic regression algorithm. This algorithm can monitored the power in each urban and the household areas. The data of the each area is getting separated into various data column. The logistic regression can check the power range and made the calculation for the consumed power. The bill rage is in normal it will maintain the same when the bill range gets exceeded it will control the power to the domestic appliances and send some notification the bill range goes on increasing. By this algorithm we can able to control the bill amount [6].

A. Akbar, M. Natiet., al., proposed the experimental test has been considered to monitor the charging and the discharging capacity of the battery storage system. The research has been made to check the capacity of the battery and withstand period. The PV energy is getting stored in the battery and the discharging test is made at regular interval of time. The battery storage period is get calculated. This paper can made both the actual and the predicted value of the photovoltaic cell. The peak value of the battery storage is get observed at the time of charging. The neural network system is get implemented to predict the capacity of the battery. As the performance of the battery is get increased the power consumption is get reduced to low level. At each stages the capacity of the battery level is get monitored. The load curve is obtained at the battery connected to the grid side. Nearly 70% of the energy is getting consumed in this method and the electricity charge is reduced [7].

Y. Agarwal, B. Balajiet., al., proposed the demand response in the smart grid is the major problem in current situation. The electricity price gets varied day to day to system. It mainly depends upon the consumption of the power. The DR system can provides a better way in the domestic area. The RTP is the real time pricing method in which it can decreases the price of the electricity. The artificial neural system is get proposed in this method to limit the power consumption and make the power charges minimum range. The RTP involves the reduction of the bill charges. The peak to peak change in the voltage can

be get monitored from the source part. The neural network system is get implemented in this system to maintain the power range in the grid [8].

M. Gupta, S. Intilleet., al., proposed In this paper they monitor the price of day to day electricity consumption. The power consumption can be monitored from the each device. The peak range voltage of the power in each device get noticed. The multi nominal logic (MNL) system is get implemented in this paper. The domestic consumption is noted and get tabulated at each stages. This can reduces the increase in maximum power range. The customer response get increased by using the MNL method. It can implemented in large area in the rural, domestic and industrial area. Power consumption data is get stored in the data set based upon the billing charge is made which made the work more simple and easy. The renewable resource are get implemented in this process to evolved the consumption of power. This can provide nearly 75% of power get consumed and the charges are get reduced to large extent [9].

J. M. Abreu, F. C. Pereira et., al., proposed In this paper they proposes the deep learning system is to predict the power consumption in the domestic area. The each device is get monitored that gets connected to the smart plug. The smart plug can monitor the power consumed by each devices. The consumption data can be get from the smart plug it sends to the web page. From the web page the data is get collected and the consumption charges are made. When the consumption range exceeds the limit it sends message the power range is increasing thereby avoiding the use of maximum amount of power. This system can shows nearly 40-50% power get consumed [10].

3. Proposed System

The main of this paper is to monitor the power consumption in house hold. The amount of power consumed is intimated to the consumer. So that they can able to use the electricity in minimum range. It can help the consumers who are all in the marginal level. The SQL based data set can collects the amount of power consumption data of each consumer. They can return the single column of data per the group. The new model of SQL in which it uses the row based data it can returns the multiple set of data per group.

4. Conclusion

We have demonstrated that we can predict some aspects of power variability of single-home power consumption using basic regression models. We tested linear regression, locally weighted regression, and ϵ -SVR with three different kernels. We also tested various methods of temporally dividing the data to account for different classes, including running separate regression models on each hour of the day, weekdays vs. weekends, and different seasons. We obtained good results in early morning hours, and larger errors at times when the inhabitants may be more active. Furthermore, we found

that all the models had similar results, indicating that the errors may be due to a lack of clean structure in our data despite our efforts to separate temporally. We attribute this to the inherent unpredictability of a single family's actions and consequent power usage.

Figure 1: Table Comparison of the Electricity Used Between 1996 And 2004

Feeder	TMY energy use based on 1996-1997 data (kWh)	TMY energy use based on 2003-2004 data (kWh)	Percentage change
3	977,428	883,000 ± 9,400	-9.7%
4	176,601	167,000 ± 2,100	-5.5%
6	999,035	1,038,000 ± 9,400	3.9%
16	4,763,891	4,980,000 ± 27,000	4.6%
Total	6,916,955	7,070,000 ± 39,000	2.2%

5. Result

The project aims at serving the department of electricity by computerizing the billing system. It mainly focuses on the calculation of Units consumed during the specified time and the money to be paid to electricity offices. This computerized system will make the overall billing system easy, accessible, comfortable and effective for consumers. Preparing a data set for analysis is generally the most time consuming task in a data mining project, requiring many complex SQL queries, joining tables and aggregating columns.

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