

SMART ELECTRIC METER NOTIFICATION SYSTEM USING IOT :A SURVEY BASED ON VARIOUS CONCLUSIONS

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Abstract:

Electricity is the basic needs of our life and one cannot think of a world without electricity. In the existing meter reading technology, the meter reading process is done by the help of labour force. But this method is subjected to several disadvantages like errors during calculation, absence of consumer during billing time and extra expenses for the billing process. Existing work aims to reduce the labour force for the billing. An energy measurement through wireless smart meter using IoT is proposed for automatic meter data collection, gives announcement through messages displayed on LCD and energy auditing. To overcome this problem IoT based smart electric meter is developed as proposed project.

Keywords — IoT, smart meter, electricity

I. INTRODUCTION

IoT of physical objects devices, vehicles, buildings and alternative things embedded with physics, software, sensors, and network property that allow these objects to gather and exchange information. It's supplied with distinctive identifiers and therefore the ability to transfer information over a network while not requiring human-to-human or human-to-computer interaction. The web of Things (IoT) has the facility to vary our world. And whereas we tend to square measure getting down to see its unimaginable impact; we tend to square measure still greatly at needs to attach all potential objects to act one another on the web to supply secure, comfort life for human. Internet of Things (IoT) makes our world as attainable as connected along. The web of Things (IoT), is outlined because the network the start of the transformational journey. Here's a glance into the present state of affairs within the race to standardize IoT, in conjunction with what folks square measure speech concerning it.

IoT can play a very important role within the future and there's expected to be a big quantity of money flowing through the market within the upcoming years. Over 1/2 major new business processes and systems can incorporate IoT components by 2020. The impact on consumers' lives and company business models is chop-chop increasing because the value of incrementing physical things with sensors and connecting them to different things devices, systems and folks continues to drop.

Far side laptops and smart phones; it's going towards connected cars, sensible homes, connected wearable, sensible cities and connected care, agriculture, and sensible retail. Sensible metering may be a central section in stingy system utilization as they're exploitation net of Things advancements to alter regular Department of Energy structure. Sensible metering through IOT reduces operating toll by managing metering abstract method remotely.

In ancient system a person from Electricity Board visit every house within the specific house and takes EB examine from each house his commitment is to notice down the viewing in units, affect

particle in EB to card and EB office. The elemental disadvantage of this structure is that remarkable has to go division by zone and he has to analyze the meter of every house and handover the EB workplace.

To create an influence charge, a circuit trained worker goes to the house on over one occasion in per month take the readings from the vitality meter. The studying is rested within the work to supply a bill. This issue is defeated in center of 2000. Here EB individual ought to come home and take the studying refreshes in EB workplace. (Conventional strategy) This issue defeats by electric meter the customer's EB unit is rested to the server naturally utilizing sensible meter.

II. RELATED WORKS

V.Vijeesh in his paper [1] said that it reduces the utilization of power at peak time and increases the demand responsive and this scheme motives the active involvement of user in the usage of power during peak hours. It has been concluded that Introduction of time varying price will create consumer recognition for the future generation.

In [2] Ranjith T., &Sivraj P., addressing a smart energy meter which is a simple energy estimating device we have used RTOS, Smart grid, Multi- core, Task Scheduling and allocation technology for the smart meter measurement .The limitation in this paper is that it does not provide information for the development of a complicated RTOS for future smart energy meters. It has been concluded that the use of smart energy meters will give the consumers a near real-time control over their energy bills.

Mustafa Burunkaya, Tufan Pars, et al in [3] proposes that there is a increasing demands on electricity so there should be a replacement of effective smart grid application ZigBee, STM32 Nucleo-64 board are the technology used for smart meter design and the disadvantage is that The PC is not cost efficient. It has been concluded that Wireless Sensor Home Area Network (WSHAN) with ZigBee combined smart meter was designed, implemented and tested.

Robotized Electric Meter Reading and Monitoring System utilizing ZigBee-Integrated Raspberry pi by A.R.Salunke [4] says that there should be a distribution of electric bill according to user use using Raspberry Pi but we should also check the check the past perusing and present perusing. It has been concluded that The information will be prepared and calculation is done in processor part after that information will be send to the client for its confirmation and fixing reason.

Visalatchi S, and Kamal Sandeep K [5] in their work have addressed downside of Power larceny management wherever Energy larceny may be a quite common problem in countries like Asian nation wherever shoppers of energy area unit increasing systematically because the population will increase and that we have used Adriano, GSM to beat this downside and at last it's been terminated that This method can scale back the labor work and human error within the distribution system and additionally defend the buyer instrumentality

In [6], Peixiang Zheng, Bin Chen, Xin Lu have created a trial to resolve the problem of Privacy outflow and therefore the trade-off between knowledge usability mistreatment trade-off algorithmic rule and it's been all over that we have a tendency to formalize the trade-off drawback as a protrusive optimization problem and therefore the experiment results on good meter dataset show our algorithmic rule is effective and sensible.

Faraz Khan and Dr.Imran Majid [7] planned 3 part terminal Blocks wherever a replacement variety of terminal block of energy meter as the simplest way to forestall energy larceny for K-Electric. The limitation of this thermal block is that Unaccountable energy consumed by the general public. and also the easy planned new mechanical style of terminal block restructures the previous terminal block with vital edges over the previous one.

Sook-Chin Yip et al [8] addressed the idea of Electricity felony with LR- ETDM algorithmic program, CVLR-ETDM algorithmic program, Two-

tailed p-value Approach this method simply show the quantity of felony however there's no privacy it's been all over that we've designed associate degreed made an AMI take a look at rig to gauge the performance of the planned linear-regression-based energy felony detection algorithms in sensible grid setting.

Dr.P.Mathiyalagan,Ms.A.Shanmugapriya[9] created economical energy conservation policies should be enforced so as to scale back residential electricity consumption victimization R and Hadoop. it's been terminated that The streaming information is loaded into HDFS in a very hive table, that is additional exported into R so as to perform prophetic analysis and cargo profile analysis.

Yang Jincheng, Jiang Ping, et al [10] uses the technology of C5.0 algorithmic program with good meter failure happens thus it ought to be known and also the limitation is merely half-dozen attributes that will have an effect on the good meters were elect to investigate during this paper it's been finished that Results from example verification indicate that accuracy of failure prediction model for good meters supported C5.0 algorithmic program.

Research on sensible Meter look Detection supported Unified LBP rule [11] QIAO Wen-yu, SHEN Lin, LYU Dan et al of sensible meter and improve the accuracy of sensible meter look detection the disadvantage is that sensible meter appearance detection with basic LBP rule cannot fully acknowledge all characters on the show of sensible meters. It's been complete that we tend to apply the unified LBP rule to spot sensible meter liquid crystal display, so as to unravel the matter two- faced by current review procedure that is proscribed by illumination variance; the strategy has ne'er been used before.

Divya.D and K.Sathiyasekar [12] Energy management includes of designing and operation of energy production and energy consumption units. Using RFID, Markov process algorithmic program And it's been over that Markov process algorithmic

program provides an economical distribution of the facility to devices supported the on the market power at that point.

In [13] PariaJokar and NasimArianpoo have created a trial in Electricity felony Detection in AMI exploitation Customers' Consumption Patterns exploitation CPBETD and at last it's been terminated that in conjunction with application of SVM anomaly detector, the algorithmic rule uses silhouette plots to spot the various distributions within the dataset, and depends on distribution electrical device meters to observe NTL at the electrical device level.

SanujitSahoo and Daniel Nikovski et al [14] Electricity larceny could be a major concern for the utilities and therefore the technology used is Technical Loss Model it's been ended that we've got fine-tuned the prognostic model for conniving technical loss for a branch within the distribution network by incorporating the Temperature dependency of resistances in an exceedingly distribution network.

Anti-theft Energy Metering for sensible Electrical Distribution System [15] Md. Umar Hashmi projected that there's no correct metering and asking of actual energy consumed by customers and also the major limitation is that the main challenge is to spot the placement of the thievery and estimate the number of energy being purloined. it's been ended that with correct data of location and degree of electricity thievery, additional responsibility are often brought into the system.

III. CONCLUSIONS

In ancient methodology workforce is needed to require current bill consumption, to intimate the user concerning the present consumption charges. This method can take longer to complete the bill cycle and conjointly user cannot ready to get an inspiration concerning his bill standing till the ultimate bill payment is generated. Our government is employing a digital meter to calculate the bill standing of the user. When finishing the bill

cycle solely user will ready to get the bill as a result of, there's no intimation for the user till the tip of 2 months. Varied survey has been analysed for the good power meter.

REFERENCES

- 1) V. Vijeesh, B. Ponkarthika, E. Kaliappan, M. Surendar, and M. Vignesh, "Energy saving and smart billing system for household consumers connected to a smart grid in tamil nadu power system," in 2018 International Conference on Power, Energy, Control and Transmission Systems (ICPECTS). IEEE, 2018, pp. 233–239.
- 2) T. Ranjith and P. Sivraj, "Futuristic smart energy meter-design based on embedded perspective," in 2018 Second International Conference on Intelligent Computing and Control Systems (ICICCS). IEEE, 2018, pp. 1379–1384.
- 3) M. Burunkaya and T. Pars, "A smart meter design and implementation using zigbee based wireless sensor network in smart grid," in 2017 4th International Conference on Electrical and Electronic Engineering (ICEEE). IEEE, 2017, pp. 158–162.
- 4) A. Salunke and N. M. Gaurkar, "Robotized electric meter reading and monitoring system utilizing zigbee-integrated raspberry pi," in 2017 IEEE International Conference on Electrical, Instrumentation and Communication Engineering (ICEICE). IEEE, 2017, pp. 1–4.
- 5) A. S. Metering, S. Visalatchi, and K. K. Sandeep, "Smart energy metering and power theft control using arduino & gsm," in 2017 2nd International Conference for Convergence in Technology (I2CT). IEEE, 2017, pp. 858–961.
- 6) P. Zheng, B. Chen, X. Lu, and X. Zhou, "Privacy-utility trade-off for smart meter data considering tracing household power usage," in 2017 IEEE 2nd Information Technology, Networking, Electronic and Automation Control Conference (ITNEC). IEEE, 2017, pp. 939–943.
- 7) F. Khan and I. Majid, "Anti-shunt theft energy meter terminal block," in 2017 IEEE 4th International Conference on Smart Instrumentation, Measurement and Application (ICSIMA). IEEE, 2017, pp. 1–6.
- 8) S.-C. Yip, C.-K. Tan, W.-N. Tan, M.-T. Gan, and A.-H. A. Bakar, "Energy theft and defective meters detection in ami using linear regression," in 2017 IEEE International Conference on Environment and Electrical Engineering and 2017 IEEE Industrial and Commercial Power Systems Europe (EEEIC/I&CPS Europe). IEEE, 2017, pp. 1–6.
- 9) P. Mathiyalagan, A. Shanmugapriya, and A. Geethu, "Smart meter data analytics using r and hadoop," in 2017 IEEE International Conference on Electro Information Technology (EIT). IEEE, 2017, pp. 623–629.
- 10) Y. Jincheng, J. Ping, C. Guangyu, Y. Tiejiang, and X. Fei, "Application of c5. 0 algorithm in failure prediction of smart meters," in 2016 13th International Computer Conference on Wavelet Active Media Technology and Information Processing (ICCWAMTIP). IEEE, 2016, pp. 328–333.
- 11) Q. Wen-Yu, S. Lin, L. Dan, and W. Zhong-Xing, "Research on smart meter appearance detection based on unified lbp algorithm," in 2016 International Conference on Smart Grid and Electrical Automation (ICSGEA). IEEE, 2016, pp. 13–17.
- 12) D. Divya and K. Sathiyasekar, "Modern real time electric meter for efficient energy management using markov chain algorithm," in 2016 International Conference on Advanced Communication Control and Computing Technologies (IACCCT). IEEE, 2016, pp. 473–476.
- 13) P. Jokar, N. Arianpoo, and V. C. Leung, "Electricity theft detection in ami using customers' consumption patterns," *IEEE Transactions on Smart Grid*, vol. 7, no. 1, pp. 216–226, 2015.
- 14) S. Sahoo, D. Nikovski, T. Muso, and K. Tsuru, "Electricity theft detection using smart meter data," in 2015 IEEE Power & Energy Society Innovative Smart Grid Technologies Conference (ISGT). IEEE, 2015, pp. 1–5.
- 15) M. U. Hashmi and J. G. Priolkar, "Anti-theft energy metering for smart electrical distribution system," in 2015 International Conference on Industrial Instrumentation and Control (ICIC). IEEE, 2015, pp. 1424–1428.