

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY,
BELAGAVI-590018**



Mini Project Report On

“Smart Electricity meter using blynk Application”

A report submitted in partial fulfillment of the requirements for

MINI PROJECT

In

**Computer Science and Engineering (IOT , Cyber Security including Blockchain
Technology)**

Submitted by

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ALVA'S
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**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
(IOT , CYBER SECURITY INCLUDING BLOCKCHAIN
TECHNOLOGY)**

ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
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CERTIFICATE

This is to certify that the Project entitled “Smart Electricity meter using blynk Application” has been successfully completed by

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the bonafide students of Department of Computer Science & Engineering (IOT , Cyber Security including Blockchain Technology), Alva's Institute of Engineering and Technology in DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING (IOT , CYBER SECURITY INCLUDING BLOCKCHAIN TECHNOLOGY) of the VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI during the year 2023–2024. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of project work prescribed for the Bachelor of Engineering Degree.

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ABSTRACT

Electricity metering and billing is a periodic process in our daily life, but also it has few disadvantages like each, and every meter must be read manually, trust issues on some meter readers and bill/meter tamper. To overcome this, here is a proposed idea where the consumed power is calculated within the meter and the data is sent to the electricity department and the customer. This system uses a Arduino, GSM module, and LCD. The Arduino is used to perform the power consumption calculation, sending the data through GSM module and write data to LCD display. The proposed system continuously monitors the amount of power consumed and then generates the total electricity bill of that month. The billing details is sent to the customer and displayed on the LCD display. If the payment is delayed it adds up the fine to the electricity bill. This system reduces manpower where each meter must be read and can be notified the customer at the correct time, which avoids penalty to the customer.

The project focuses on encrypting digital images by transforming them into unrecognizable formats while preserving their integrity. The image is preprocessed, converting pixel values into numerical data compatible with AES. The algorithm operates on these blocks using key expansion, substitution, row shifting, and column mixing to produce encrypted images with scrambled pixel values. The same process in reverse is applied during decryption to retrieve the original image.

The old manual system was suffering from a series of drawbacks. Since whole of the system was to be maintained with hands the process of keeping maintaining, and retrieving the information was very tedious and lengthy. The records were never used to be in a systematic order. There used to be lots of difficulties in associating any particular transaction with a particular context. If any information was to be found it was required to go through the different registers, documents there would never exist anything like report generation.

In the proposed SEM using GSM would go a long way in making people conscious of the amount of energy they spend and help to conserve the conventional depleting resources. The automation of billing system eliminates human involvement hence more accurate and reliable. The implementation of time of-day billing can control the usage of electricity on consumer side to avoid wastage of power which helps in reduction of energy generation costs. The introduced Prepaid Billing System minimizes the Electricity theft in a cost-effective manner. Automation of meter reading also gives the information of total load used in a house on request at any time as well as to make consumers to keep track of energy usage. It sends a SMS alert to energy provider company whether a person using more than specify limit of load. The use of a web-service developed at load Centre has made it possible to overcome the computational complexity of smart meters currently used on the market.