**POWER EFFICIENCY USING MACHINE LEARNING**

**ABSTRACT:**

Energy wastage is one of the major issues in today’s modern world.It is estimated that around 35% of the energy supplied to the households is wasted.While many households might not even be aware of this wastage, but at the global level, this wastage adds up to a significant percentage of the energy generated. Energy audits cannot be conducted in households.Most households wouldn’t go down the energy audit route (for various reasons) to assess the energy efficiency and energy usage of their homes because current methods of energy auditing will not be feasible for households as energy auditors are few in numbers and their charges are quite high. So, Solving this problem is the number one priority.

The proposed model consists of an IoT based system which measures the usage of power in households. This data is sent to the database for storage.The details about the energy consumption is also displayed in the website for the user to view.The energy usage details can be viewed either day wise or month wise.The energy consumption and the cost for the next month is then predicted using machine learning’s Linear Regression algorithm.Once the data is predicted, it is displayed in the website for the user's perusal.Given the user is ready to spend extra cost (which is not very costly)for the wiring and increased accuracy,power sensors can be connected in every switch box connection and for each and every device separate cost and unit consumed will be predicted. In this way we can easily detect if there is any power wastage or any fault in the system as there will be a spike on the algorithm’s plotted data.In the website there will also be a maximum limit for cost as well as units consumed, if that limit is reached the user will be notified.With this system the power usage in households can be minimised.That is, there will be no wastage of energy.It is also possible to divert the energy units from one system to another, if a particular system requires more power whereas other does not.With the current working model,this proposed model has achieved an accuracy of 89% in predicting the cost and energy consumption of the succeeding month and this model has also been able to detect the power leakage in the households.