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Author(s) Name:	Ahmed Muntasir Anwar, Md. Rifat Hazari and Mohammad Abdul Mannan
Contact Email(s):	mdmannan@aiub.edu
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Abstract:

An essential instrument for the operation of a power system is to monitor and analyze the data to find the fault and rectify it before the system collapses completely. This paper intends to utilize the idea to create a control system that will fulfill objectives like monitoring vital parameters controlling the power distribution, outage management by fault detection based on the variation of Voltage, Frequency, and Current & protection of the Circuit against any significant incidents by isolating the load from utility and flagging the information through feedback to the utility authority. The Project implements the high-end technology for IoT applications that will connect with the Microcontroller to receive the data at regular intervals and post the timestamped data in a cloud platform for remote monitoring and archiving. This innovation can reduce human dependency and overcome the whole outage situation by building a two-way communication that means electricity and information are traded between consumers and utilities to capitalize on the efficiency of a grid system. The proposed model offers intelligent monitoring of the timestamped data with remote access & historical data archiving for a better load profile. An outage management system is designed for the proposed system by intellectual fault detection through Voltage, Frequency & current variation, and isolation of the faulty part from the entire system, maintaining an auto circuit recloser application before the permanent isolation for reducing the human interaction & flagging the outage information & supply emergency backup during the shutdown period, and in the process, helping the power grid from total power outage or blackout.

Keywords:

Electrical power system, microcontroller, wi-fi module, GSM module, remote data monitoring, demand side management, outage management system, IoT.