Similar to React Native for the Web, React Native applications are created using a mixture of JavaScript and XML-Esque syntax, known as JSX. Then, beneath the hood, the React Native “bridge” accesses the native rendering APIs in Objective-C (for iOS) or Java (for Android). As a result, apps appear and feel like any other mobile app, as it will be rendered using native mobile UI components rather than web-views. Blynk exposes JavaScript interfaces for platform APIs, allowing apps to make use of platform capabilities such as the phone camera or the user's location. [13] [14][15]

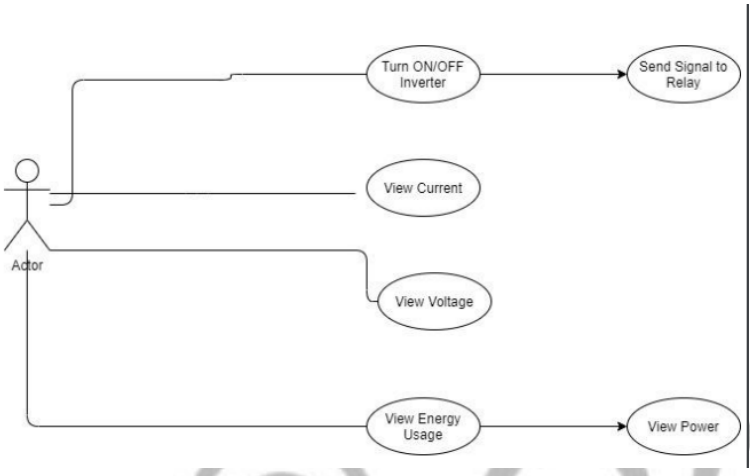

Figure 3: Use Case Diagram for Mobile Application

3. Results and Discussion

Using the specified components as described in the previous chapters and methodology as illustrated in the block diagram and the circuit diagram obtained from simulation of the project using Proteus computer-aided design software, a functional system of an IoT-based solar inverter using NodeMcu was implemented successfully. There was a seamless synchronization between the power section consisting of the battery and the solar-powered inverter, the microcontroller section, the cloud communication, the software and user interface section. Results obtained showed the test for different loads and the system operating at no-load (idle). Snippets from the graphical user interface of the application at different load options are shown below:

(a) At No-Load (idle) (b) System on Power

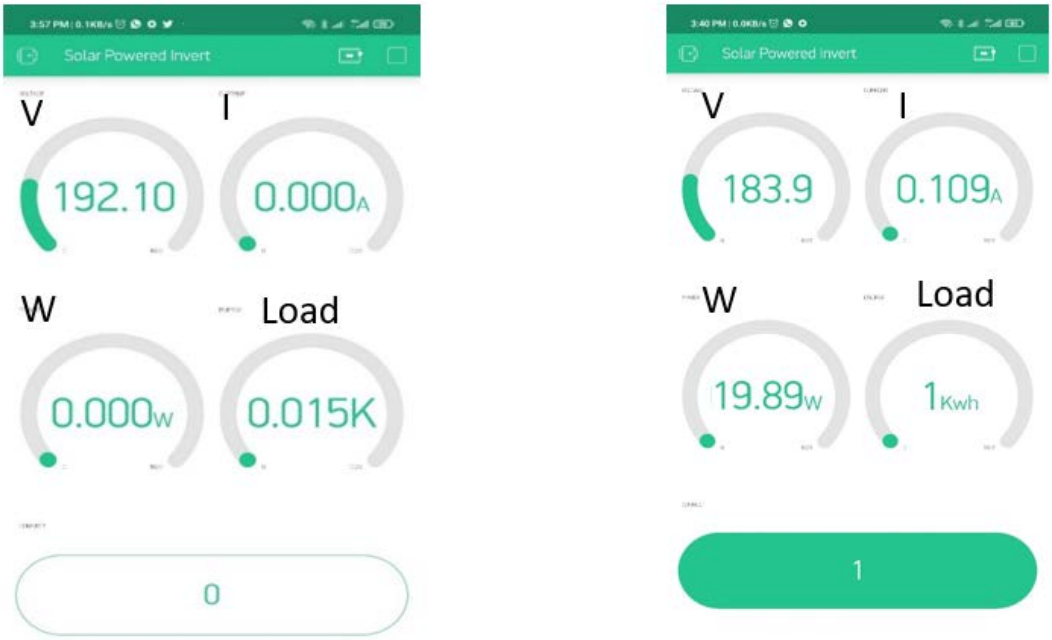

Figure 4: Screenshot of the homepage at no load and on load

3.1 Load Results

3.1.1 Load Under Test: 16w, 30w, 60w, 100w Load

Table 4.1 Result for Solar Inverter System

V_{AC}	V_{DC}	**Load AC** **In Watts**	**Time** **In Minutes**
220v	14.15v	Idle (0watts)	Start
220v	14.14v	16watts	After 2 minutes
220v	13.42v	30watts	After 2 minutes
220v	12.76v	60watts	After 2 minutes
220v	12.44v	100watts	After 2 minutes

Each load is removed from the outlets after two minutes and the system is tested with another load. On the software interface, the system is refreshed every 5 seconds and power consumption against time is updated on the analysis graph. This is shown below:

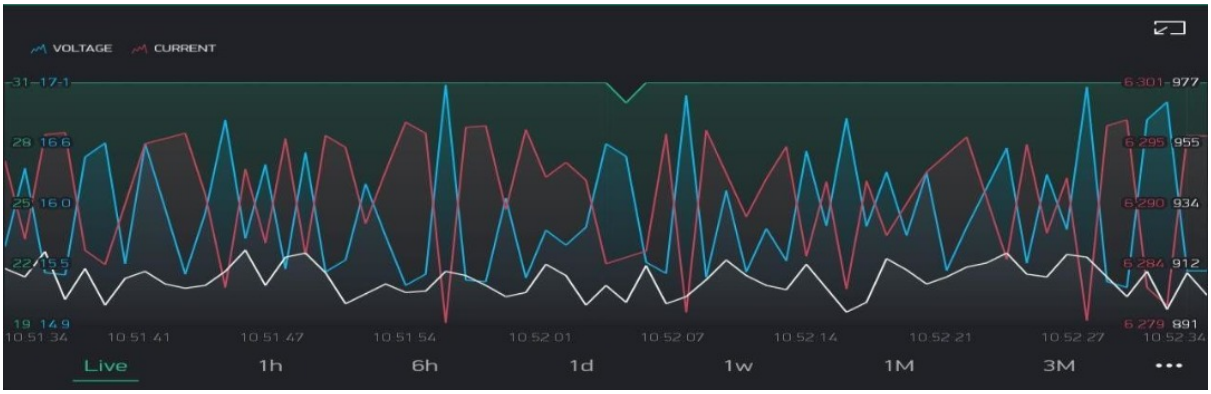

Figure 5: User Interface showing Graph of Voltage and Current against Time

The graph above represents the graph of voltage against time and current against time. The analysis graph records real time data, as well as hourly update.

4. Conclusion.

The aim of this project was to remotely monitor and control a solar powered based inverter using the internet of things, in the most efficient way. This was achieved at the end of this project. A user making use of his smartphone can remotely monitor the system and can cut off or shut off the system if load exceeds the desired threshold. This project will be of great use to individuals who own solar powered inverters and would want to be able to control and monitor their inverters regardless of their current location, it would also encourage users of alternative energy to purchase and exercise ownership of these systems which provides a greener source of energy and is safer for the environment, as this technique is developed further, it will go further than the scopes indicated and provide a more realistic attempt to fix solar inverter system inefficiency while also providing more helpful information regarding energy advancement.[15]

Nomenclature.

RFID	Radio Frequency Identification
IoT	Internet of Things
LTE	Long Term Evolution
PV	Photovoltaic
MCU	Micro Controller Unit
LCD	Liquid Crystal Display
AWS	Amazon Web Service
RES	Renewable Energy Sources
PEl	Power Electronic Interfaces
EMS	Energy Management Systems

BESS	Battery Energy Storage Systems
GTI	Grid Tied Inverters
PCC	Point of Common Coupling
NFC	Near Field Communication
GSM	Global System for Mobile Communication
GPRS	General Packet Radio Service

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