

## **ABSTRACT**

*The development of the era in this modern era, requires additional electrical energy as a substitute for existing electricity. Solar cell is one of the developers of electrical energy, where this solar cell absorbs light energy from the sun and then converts it into electrical energy, so that it can produce additional electrical energy in daily life. The difficulty in knowing how much energy is obtained and the difficulty of determining the direction of the sun makes solar cells absorb light energy not maximally.*

*To overcome these problems, it will be designed to control and monitor solar cells by using a smartphone with an Android application based on Internet of Thing (IoT). This application is designed to simplify the monitor and control remotely with a compass module in the solar cell, so that the output from the solar cell displays the voltage and current and direction in the application. Display data on the application obtained through the internet that is sent by the database is Firebase that passes through the microcontroller device using NodeMCU.*

*In designing this application displays data in the form of voltage, current, and direction of the sun so that the solar cell gets the maximum voltage. The experiment was carried out with two controls, automatic and manual. The maximum voltage and current values in the test that can be obtained through automatic control at 12 p.m. with northward reach voltage of 19.49 volts and current of 0.25 amperes. The maximum voltage and current values in the test obtained through manual control at 11 p.m. with northward reach voltage of 19.60 volts and current of 0.26 amperes.*

*Keyword: Android, IoT, Solar Cell, NodeMCU, Firebase.*