

ABSTRACT

Two-wheeled motorized vehicles are prone to Overheating due to engine temperatures that exceed normal limits, which can cause sudden engine failure. One of the causes is poor oil quality, which increases the temperature in the engine and results in Overheating. This research develops a heat monitoring and warning system using the Internet of Things (IoT) to monitor the engine temperature of two-wheeled motorized vehicles. The system uses an ESP32 microcontroller and a K-type thermocouple sensor connected to the Flutter application via Bluetooth. Temperature data is sent to the Database via the internet on a Smartphone, and this data is analyzed using linear regression for temperature prediction based on historical data. Calibration testing was performed first, showing an average temperature difference of 2.93°C between the thermocouple sensor and the thermogun, with an average error of 6.4%. After calibration, the average temperature difference decreased to 0.41°C between the thermocouple sensor and thermogun, with an average error of 0.6%. Further testing was carried out by taking data during the day and night, showing an average standard deviation of 10.1 during the day and 5.1 at night, which indicates that the thermocouple sensor is accurate enough to measure the engine temperature of two-wheeled motorized vehicles.

Keywords: *Two-wheeled motorized vehicle, IoT (Internet of Things), Thermocouple sensor, Machine Learning, Overheating.*