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IOT Based Motor Monitoring and Control System using ESP32-Devkit-V1

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Abstract: *This project covers the real time measurement and control of parameters of an AC/DC motor for a sewing machine. The system can monitor main variables including voltage, current, temperature, vibration and speed. These measurements are accumulative and include ZMPT101B voltage sensor, ACS 712 30A current sensor, PT1000 thermal sensor, MPU 9250 voltage-wear for vibration, and KY-040 for speed. Data processing, on the other hand, is done by the ESP32 Devkit V1 microcontroller in this student equipment.*

All the data is collected and conveyed on a laptop in 'real-time' format via a graphical user interface. I have a graphical presentation of the data besides having alerts to remind users when parameters get high or low or reach any specific safe operating limit. There is also included a 4-Channel Relay module in the project to control the motor, and has an alerting process. The whole system is supplied by a regulated supply voltage suitable for ESP32 and sensors application.

This system offers solutions to observe the motor performance and safety while improving the dependability of the operations. It is especially useful where the use of a sewing machine in its various operations requires constant monitoring; for instance, in industrial or domestic use..

Keywords: Real-Time, Monitoring, ESP-32 Devkit-V1, Motor, IOT (Internet Of things)