

ABSTRACT

The part of the control circle through the internet is known as a networked control system (NCS). Many tools have applied NCS and the presence of the Internet of Things (IoT) so that industrial devices and sensors can be connected to each other via the internet network. Thus, it enables industrial users to obtain and use information from connected devices. In the industrial environment, the MQTT protocol is the most well-known protocol. So, in an IoT-based industry one can control and survey from anywhere in the world. Position control in DC motors is a very important application for precision control systems.

This study aims to create a DC motor position remote control system using PID via NCS. By applying NCS to DC motor position control using PID. Using the Arduino Uno microcontroller and the esp8266 wifi module to send or receive data from the internet network. Motor Driver L298N to control a DC motor and a potentiometer as a sensor to determine the position of the rotation angle in the system. Using the MQTT protocol for communication on internet networks.

With the NCS architecture, the master tool sends set points to the MQTT broker and the slave device receives the set points from the MQTT broker who is in charge of position control on the DC motor with the PID of the received setpoints. The research method used in this research is the method of literature study, testing and analysis of system performance. From the research data obtained that the tool designed has an average accuracy of 1.73 degrees and an average precision of a standard deviation of 0.56 degrees. With the values of K_p 30 and K_d 2.5 get a good system response graph. The response time delay from the internet network for the slave receiving the setpoint takes an average of 0.925 seconds. Based on the response graph from the setpoint test results and the closed $\neg$ loop system response, the steady state error is 0%, the settling time is 0.2 seconds and has no overshoot.

Keyword: *Networked Control System, Internet of Things, MQTT, PID, Broker, Master, Slave*