

DESIGN AND CONSTRUCTION OF AN AUTOMATIC FENCE DOOR PROTOTYPE USING IOT BASED ON MICROCONTROLLER

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ABSTRACT

As technology develops so rapidly, it triggers human life to always seek convenience and more efficient use of time. One effort to provide this convenience is through the development of an automatic system for gates. This system is based on a microcontroller using telegram applications and RFID sensors. Telegram functions as a message sender so that the gate can open and close automatically. When cellular networks are not available, RFID can be used to open the gate automatically by attaching an ID card or e-KTP to the RFID without having to open and close it manually. In the mechanical design, multiplex with a thickness of 1 cm and acrylic were used as the sliding gate. In designing this security system, the ESP-32 microcontroller is used as a processor to process input and output from each component, an RFID reader as a signal information reader, an ultrasonic sensor for object detection, an LCD as a user interface and other supporting components. In the process, the telegram and RFID sensor will connect to IoT and give commands to the microcontroller, then the microcontroller gives commands to the dc motor to move the gate to open and close. From testing using registered and unregistered Telegrams, the success rate for the Telegram application was 100%. In testing the RFID reading distance, the results showed that the RFID module used had reading capabilities at a distance of 0 cm to 1.4 cm. Based on tests using e-KTP, the RFID success rate is 100%.

Keywords: *ESP 32, Microcontroller, IoT, RFID, Telegram*