MQTT INTEGRATION AND VIRTUINO IOT SOFTWARE IN AN IoT-BASED CAT FEEDER DEVICE

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ABSTRACT

Indonesia is one of the Southeast Asian countries where the majority of people enjoy keeping cats as pets. These animals require special attention, especially in meeting their nutritional needs. Many cat owners still use conventional feeding methods, which makes it difficult to monitor and feed cats directly, particularly for those with limited time. This study aims to develop an automatic cat feeder system based on IoT by integrating the MQTT (Message Queuing Telemetry Transport) protocol and the Virtuino IoT application for control and monitoring. MQTT is an IoT communication protocol that transmits data using publish and subscribe methods through a broker. Virtuino IoT is an application capable of controlling and monitoring IoT data and supports the MQTT communication protocol. The designed cat feeder system consists of several sensors and actuators, including HCSR04, Loadcell, a stepper motor, and ESP32 as the main data processor. Test results showed the average error for the Loadcell sensor was 0.8%, for the HCSR04 sensor 1.7%, and the automatic feeding system had a distribution error rate of 0.9%. Sensor reading fluctuations from HCSR04 and the auger design became primary concerns. Therefore, it is recommended to use a more stable sensor or add a feed top-limiter to reduce fluctuation, as well as to revise the auger design for more effective feed dispensing. This research demonstrates that the integration of MQTT and Virtuino IoT in an IoT-based cat feeder is effective in improving feeding efficiency and assisting users in pet care.

***Keywords**: Virtuino, MQTT, IoT, Cat Feeder.*