ABSTRAK

"RANCANG BANGUN SISTEM KONTROL DAN MONITORING PENGAMAN SEPEDA MOTOR DENGAN MENGGUNAKAN MODUL *VOICE RECOGNITION* V3 BERBASIS IoT"

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Penelitian ini bertujuan merancang dan membangun sistem keamanan sepeda motor berbasis IoT menggunakan modul *Voice Recognition* V3 dan ESP32 CAM. *Voice Recognition* V3 berfungsi mengenali perintah suara pengguna, sementara ESP32 CAM mengambil gambar wajah pengguna dan mengirimkannya ke aplikasi Telegram untuk pemilik. Pemilik sepeda motor juga dapat mengontrol kontak motor melalui Telegram.

Pengujian dilakukan untuk mengevaluasi akurasi pengenalan suara, waktu respons, dan kinerja modul dalam berbagai tingkat noise. Hasil menunjukkan modul *Voice Recognition* V3 mampu mengenali perintah suara dengan tingkat keberhasilan hingga 95% pada jarak optimal 10--80 cm dari mikrofon. Namun, kinerjanya menurun di lingkungan dengan gangguan noise yang tinggi. Sementara itu, ESP32 CAM membutuhkan waktu rata-rata 5 detik untuk mengirimkan data, tergantung kualitas jaringan internet.

Sistem yang dikembangkan berhasil meningkatkan keamanan sepeda motor melalui fitur pengenalan suara. Sistem ini memberikan solusi inovatif dalam mencegah pencurian kendaraan bermotor. Namun, terdapat keterbatasan, seperti ketergantungan pada koneksi internet dan sensitivitas terhadap gangguan noise di lingkungan sekitar.

Kata Kunci: *Voice Recognition* V3, I*oT*, Keamanan Motor

ABSTRACT

*"CONTROL AND MONITORING SYSTEMS MOTORCYCLE
SAFETY USING IoT BASED VOICE RECOGNITION V3 MODULE"*

By

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This research aims to design and build an IoT-based motorcycle security system using the Voice Recognition V3 and ESP32 CAM modules. Voice Recognition V3 functions to recognize the user's voice commands, while the ESP32 CAM takes a picture of the user's face and sends it to the Telegram application for the owner. Motorbike owners can also control motorbike contacts via Telegram.

Tests were conducted to evaluate speech recognition accuracy, response time and module performance in various noise levels. The results show that the Voice Recognition V3 module is able to recognize voice commands with a success rate of up to 95% at an optimal distance of 10--80 cm from the microphone. However, its performance decreases in environments with high noise interference. Meanwhile, the ESP32 CAM takes an average of 5 seconds to transmit data, depending on the quality of the internet network.

The system developed succeeded in increasing motorbike safety through the voice recognition feature. This system provides an innovative solution in preventing motor vehicle theft. However, there are limitations, such as dependence on an internet connection and sensitivity to noise interference in the surrounding environment.

Keywords: Voice Recognition V3, IoT, Motorcycle Safety