GATE - APPS DESIGN
BASED ON AUTONOMOUS NUMBER PLATE RECOGNITION FOR PARKING ACCESS SYSTEM

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ABSTRACT

Gate - APPS is a product designed to increase the security and processing speed of a parking access system. This product is an embedded system designed to perform multiple verification functions at the entrance and exit gates of parking areas. The main identification is done by recognizing the vehicle number plate using the Autonomous Number Plate Recognition (ANPR) technique when the vehicle is at the entrance and exit gates. The second identification is done at the exit gate by reading the driver's identity through the driver's ID Card. Multiple verification is done by matching two types of identities with identity data in the database. The test results obtained show the success of vehicle number plate recognition by 100% for ideal conditions and 85% for real conditions. The success of the overall system integration by 100%. The average time recording is 3.88 ± 0.07 seconds at the entrance gate and 5.37 ± 0.03 seconds at the exit gate.

Keywords : *Embedded System, ANPR, Parking*

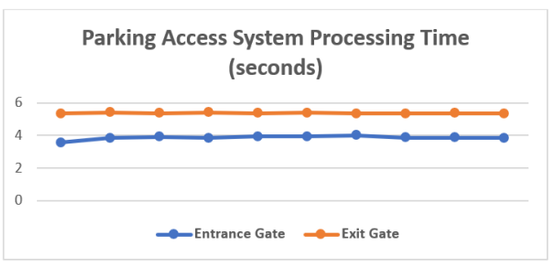
INTRODUCTION

Currently, the parking area security system is still experiencing security problems. To cover this security problems, an ANPR-based embedded system was developed which was supported by double verification using the RFID Smart Card. The development of this system also aims to increase the processing time in the parking gate area where the average time for a parking access system with parking ticket technology is currently recorded at ± 15 seconds for the entrance gate and ± 9 seconds for the exit gate..

METHODOLOGY

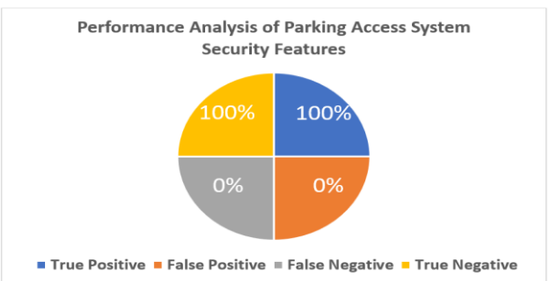
This research starts with problem observation and literature study, development planning, design and testing, optimization, then discussion and analysis, report preparation, conclusions and suggestions.

RESULT AND ANALYSIS



Based on the test results, the average processing time for the parking access system is 3.88 ± 0.07 seconds for the entrance gate and 5.37 ± 0.03 seconds for the exit gate. To check the security of the parking access system, a performance analysis is carried out based on four quadrants, as follows :

- *True Positive*, is a condition where the identity verification is correct, and the system correctly detects that the verification is correct so that the gate opens.
- *False Negative*, is a condition where the identity verification is correct, but the system mistakenly detects that the verification is wrong so that the gate does not open.
- *True Negative*, is a condition where the identity verification is wrong, and the system correctly detects that the verification is wrong so the gate does not open.
- *False Positive*, is a condition where identity verification is wrong, but the system mistakenly detects that the verification is considered correct so that the gate opens.



CONCLUSION

The conclusions of this research are as follows :
The parking access system has been successfully integrated 100% where all sub-systems are connected and give the system response as expected. The processing time at the entrance gate is 5.37 ± 0.03 seconds and the processing time at the exit gate is 3.88 ± 0.07 seconds. The success rate for identification of vehicle license plates is 100% for ideal conditions and 85% for real conditions.

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