



## A Case Study

# Revolutionizing Residential Access Control: Ambang Botanic's AI-Powered License Plate Detection System

## Overview

Ambang Botanic is a residential area located in the Klang Valley area of Malaysia. The area is known for its beautiful landscape, quality housing, and excellent amenities. However, it has faced several challenges with its existing access control system.

To solve these challenges, Ambang Botanic has decided to implement Tapway VehicleTrack, an automated access control system using AI vision that detects license plates.

## Challenges

1. The tedious access card management process often led to additional costs for RFID access cards
2. The use of access cards was not user-friendly, and residents often faced difficulties in using them
3. Access cards could be passed on to anyone, which posed a security concern for the residential area
4. Current visitor management process resulted in long queues and increased waiting times for visitors

## Solution

With **>99.4%** license plate character accuracy, Tapway VehicleTrack is deployed to automate Ambang Botanic's access control by detecting license plates.

VehicleTrack enables residents to enter and exit the residential area seamlessly without the use of access cards. It matches the license plates with the registered vehicle information in the database and verifies the authenticity of the vehicle. This two-factor authentication system ensures that only valid vehicles can enter the residential area.

Tapway is using **AWS IoT Greengrass** to seamlessly manage all the edge servers while ensuring they have the capabilities of the cloud without the need for manual intervention. In addition, Tapway is also using **AWS SageMaker** for model training and real time cloud inference. **AWS SageMaker** helps to monitor training runs, troubleshooting logs and spawning parallel hyperparameter tuning jobs.

## Results

The implementation of VehicleTrack has several benefits to the Ambang Botanic residential area.



**Cardless and Touchless Access Control**



**Drive-In & Drive-Out Experience**



**Two-Factor Authentication System**



**Continuous AI Model Improvement**



**Smart Matching System**



**Reduced Queue & Waiting Times**

## Conclusion

The implementation of Tapway VehicleTrack has provided significant benefits to the Ambang Botanic residential area.

The system has eliminated the need for access cards and reduced the costs associated with them, while also improving security by implementing a two-factor authentication system.

The system has also significantly reduced waiting times and queues associated with the current visitor management process, making it faster and more efficient.

The continuous AI model improvement enhances the accuracy of the system, reducing the likelihood of false positives or false negatives.

Overall, the implementation of this automated access control system has greatly improved the user experience for residents and visitors alike.