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MULTIMEDIA AND COMPUTER SCIENCE

INVENTION AND INNOVATION EXHIBITION

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# **i - J a M C S I I X** **2023**

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INVENTION AND INNOVATION EXHIBITION (I-JaMCSIIIX) 2023

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## 2023

INTERNATIONAL JASIN MULTIMEDIA & COMPUTER SCIENCE  
INVENTION AND INNOVATION EXHIBITION (I-JaMCSIIIX) 2023

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# Enhanced Car Park Security Through an Automatic Plate Number Recognition (APNR) System Featuring QR Code Generation

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**Abstract**— Traditional parking methods are widely implemented in car park areas, involving cash payments and manual processes for monitoring, access control, and reporting, managed by both parking wardens and car owners. Nonetheless, this traditional parking approach becomes increasingly inconvenient as time passes and the number of vehicles grows rapidly. This subsequently results in parking spaces filling up quickly, leading to car owners to spend considerable time searching for a vacant spot. In addition, the growing number of vehicles also increases the workload for parking wardens, who may have the tendency to commit errors when handling manual payments. Hence, this project leverages advancements in Automatic Plate Number Recognition (APNR) system and the unique features offered by QR codes to address the above-mentioned challenges. The developed APNR system utilizes the EasyOCR library for efficient character recognition, while QR codes are generated via the QR code generator. The developed system functions by recognizing the car's registration plate number using APNR for the first-time users upon entering the car park area. Subsequently, it generates a specific QR code for the vehicle. If the car owner wishes to park in the same area again, he/she just needs to present the designated QR code to gain entry or exit access. All authentication processes are executed automatically and this would allow parking wardens to monitor the parking area via the system. Based on comprehensive testing performed, this system successfully fulfils all use cases of the functionality testing. In terms of accuracy testing, the developed system achieved an 80.00% recognition rate for plate numbers. Based on these results, it is demonstrated that the developed system significantly enhances the traditional parking approach.

**Keywords**—Automated Plate Number Recognition (APNR), traditional parking, QR code



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