UNIVERSITI TEKNOLOGI MARA

OBJECT DETECTION IN AERIAL IMAGES USING CONVOLUTIONAL NEURAL NETWORK (CNN)

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ABSTRACT

Object detection in aerial images helps a wide range of defence and security agencies to monitor by recognising and identifying vehicles, monitoring essential facilities, and detecting potential hazards or suspicious activity. The article that related to this study were identified and described based on the chosen algorithm, objectives, problems, and the significance. To solve this aim, several steps will be used including analysis, design, development, evaluation, and documentation phases. It also has been explained about the use of Convolutional Neural Network (CNN) in the project, the advantages and disadvantages, the implementation of the algorithm in various problem and similar works with the project title. The aerial image dataset is split into 60% training and 40% testing sets, pre-processed for resolution and pixel normalization. A CNN model is then implemented with Adam optimizer. The model's accuracy is recorded and saved for detecting cars in aerial images, evaluated by user input to ensure accurate identification of cars and absence of cars. This project has achieved its objective where the system can detect object (cars) in aerial images with the highest accuracy. CNN were used to train the model with a split of 60:40 with the highest accuracy among the test result is 68.42%. The model's performance depends on the task, dataset, architecture, and implementation. Despite the potential of CNN in certain cases, the study's use of a Sequential CNN model resulted in reduced accuracy, possibly due to task complexity or overfitting issues.

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