

## Drone Classification Using Classification Methods Using Conventional Model With Embedded Audio-Visual Features

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**Abstract :** This paper investigates the performance of drone classification methods using conventional DCNN with different hyperparameters, when additional drone audio data is embedded in the dataset for training and further classification. In this paper, first a custom dataset is created using different images of drones from University of South California (USC) datasets and Leeds Beckett university datasets with embedded drone audio signal. The three well-known DCNN architectures namely, Resnet50, Darknet53 and Shufflenet are employed over the created dataset tuning their hyperparameters such as, learning rates, maximum epochs, Mini Batch size with different optimizers. Precision-Recall curves and F1 Scores-Threshold curves are used to evaluate the performance of the named classification algorithms. Experimental results show that Resnet50 has the highest efficiency compared to other DCNN methods.

**Keywords :** drone classifications, deep convolutional neural network, hyperparameters, drone audio signal

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