

TURBO AI
By
Team MIT, Moradabad.
(Armaan Siddiqui & Akshdeep Singh)

Binary Classification

A CNN based AI software utilizing micro-Doppler images to accurately classify objects as either drones or birds. This system will load the radar image data.

INNOVATION

Our solution uses radar data images then captures required features like blade rotation patterns for drones and wing-beat patterns for birds for classification from the spectrogram images, offering high-precision classification to eliminate the confusion between birds and drones due to similar physical characteristics and flight patterns.

Algorithm used:

A convolutional Neural Network using TensorFlow and keras libraries in python.

Model:

- 1) The process of making the model comprises of defining epochs as 50 and dividing the dataset into 16 batches.

- 2) The CNN layer comprises of 15 layers majorly Conv2D, MaxPooling2D, Flatten, Dense, Activation, Dropout layers.
- 3) The image was resized into 128x128 pixels to create symmetry in the dataset.

After this the model was trained.

Performance:

$$\text{Accuracy} = \frac{\text{Error}}{\text{True Value}} \times 100\%$$

A terminal window screenshot with a dark background. It shows the text '12/12' followed by a green progress bar, then '4s 367ms/step - accuracy: 1.0000'.

The above image shows the accuracy for testing phase of the model.

So,

Our model's Accuracy= 1*100=100%

Hence, The model classifies the radar data into bird or drones with 100% accuracy.

Link for GITHUB REPOSITORY:-

https://github.com/ARMAANSIDDIQUI/TURBO_AI_CHALLENGE_MIT.git