Capstone Project Report

James Cook University Cairns

Hunter Kruger-Ilingworth (14198489)

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Introduction

This report covers the process of deploying a convolutional neural network model using Amazon Web Services (AWS) SageMaker. This model is evaluated, and then compared to a model which has been pre-trained on whatever pretrained keras thing i choose.

The topic being analysed is the detection of whether an image is produced by generative AI or not. This is a topic of significant interest, as AI models have seen a large increase in image generation capabilities, leading to a conversation of their ethical implications in producing artwork, or for manufacturing misinformation.

The dataset used for this project was a competition dataset from Hugging Face, held in 2023 [1]. The dataset consists of 62,060 images, and is 2.37GB in size, being pre-split into training and tesing sets, as summarised in tables 1 and 2, where it can be seen that the testing set has the class labels withheld due to the competition setting, restricting this analysis to the 18,618 training images, which we can sub-divide and validate with known labels.

Feature	Description
`id`	Index filename `34.jpg`
`image`	The Image object (rgb 512x512 resolution)
`label`	Binary class label [1=AI, 0=not AI]

Table 1: Dataset features and their descriptions.

Class Label	Train Count	Test Count
AI (1)	10,330 (55.5%)	NA
Not AI (0)	8,288 (45.5%)	NA
Total	18,618	43,442

Table 2: Counts of each class label in the training and testing sets, where it can be seen that the testing set has the class labels withheld due to the competition setting

References

[1] Hugging Face Datasets, "competitions/aiornot," https://huggingface.co/datasets/competitions/aiornot, 2023, accessed: 22 July 2025.