Project ID: 147

Introduction to Deep Learning

Final Assignment Report

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Introduction to Deep Learning: Project ID=147

1. Download images from here: <https://drive.google.com/drive/folders/10aLwioMIHFFXFfskIgsRi9P4X0MZ59jQ?usp=sharing>
2. Design a network to identify the class of birds with an upper limit of 10M parameters.
3. Things needed to be submitted:

* Codes
* Report(containing model architecture, training details, training curves)

Link to Saved Report and GitHub Repo

Link to GitHub Repository

https://github.com/akm-14/SOC-Deep-Learning/blob/main/Final\_Project.ipynb

Link to Report

How to Use?

* Download the given dataset.
* We segregate the dataset into training and testing images according to the given file <https://drive.google.com/file/d/1Sl6UmTaVQLdCxcAHgRBXxQCv-21e5WoE/view?usp=sharing>
* We run Final\_project.ipynb, this will
  + Process the dataset and make the training and testing images dataset.
  + Process the images to make it easier to classify them.
  + Define the model (MobileNetV2)
  + Train the model
  + Plot Train/ Val losses
* We have to evaluate on our test dataset, this will:
  + Go through test dataset and make prediction about the species of bird.

Architecture Used:

The MobileNetV2: As a whole, MobileNetV2 architecture begins with an initial fully convolution layer consisting of 32 filters, followed by 19 residual bottleneck layers.

I have used just the model architecture for my project.

Changes we made in the model:

Over the model used two layers of Convolutional Neural Networks along with Max Pooling.

Over this used a dense layer to make the model work.

Device Specification:

The devices and softwares used:

AMD Ryzen 5 CPU 5600H

NVIDIA T4 GPU

Training Details:

Training and Test split according to the given text file.

Total number of images = 11788

Total number of parameters used = 3.8M

Batch Size = 32

Epochs Trained = 5

Criterion Used = Categorical Cross Entropy

Optimizer Used = Adam(lr = 0.001)

Results: MobileNetV2 with 3.8M parameters seemed to perform quite good. I exerted maximum effort and utilized all available resources, but unfortunately, I was unable to finalize the project.