Image Classifier

Project Team #2 - Lonely Debuggers

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Project Description

A web application for classifying user images against the CIFAR-10 dataset

Technical Description

- a web service that classifies images using convolutional neural networks;
- a convolutional neural network capable of assigning the image transferred to it to one of the 10 classes proposed in the CIFAR-10 dataset;
- custom architecture with 92.1% accuracy on test images from the CIFAR-10 dataset;
- the web interface is implemented using the Django framework;
- the application is be containerized in Docker and the image uploaded to Docker Hub;
- the application is deployed in the Azure cloud and is available from the link;
- the source code is available on GitHub at the link;
- to download an image with app from Docker Hub, run:
  > docker pull matajur/imageclassifier:imageclassifier
- to run the web application:
  > docker run -p 8000:8000 imageclassifier

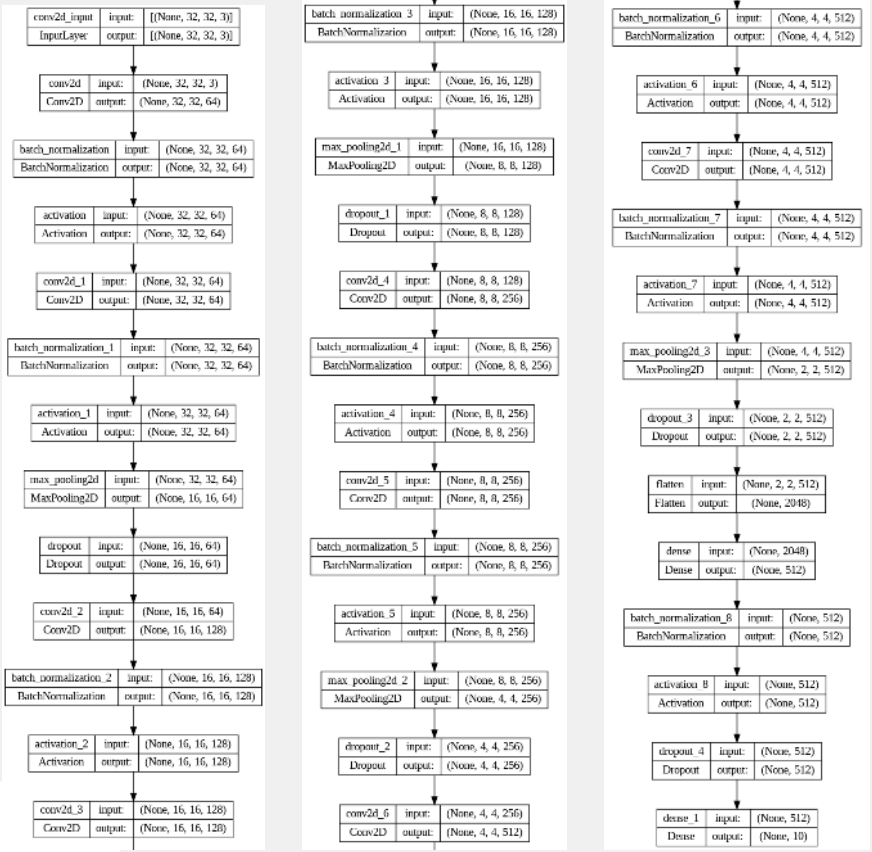
Training & Validation Dataset

The CIFAR-10 dataset consists of 60,000 32x32 pixel color images in 10 classes (6,000 images per class). There are 50,000 training and 10,000 test images.

Model Description

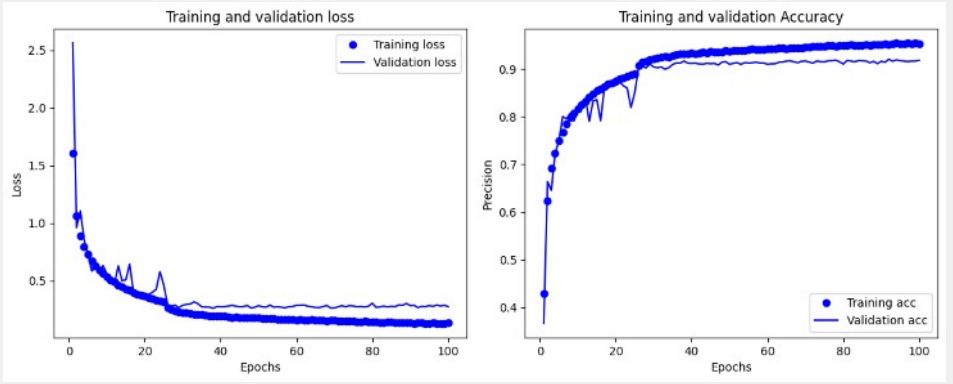
Architecture (8 Conv + 2 Dense)

Total params: 5749322 (21.93 MB)
Trainable params: 5744458 (21.91 MB) / Non-trainable params: 4864 (19.00 KB)



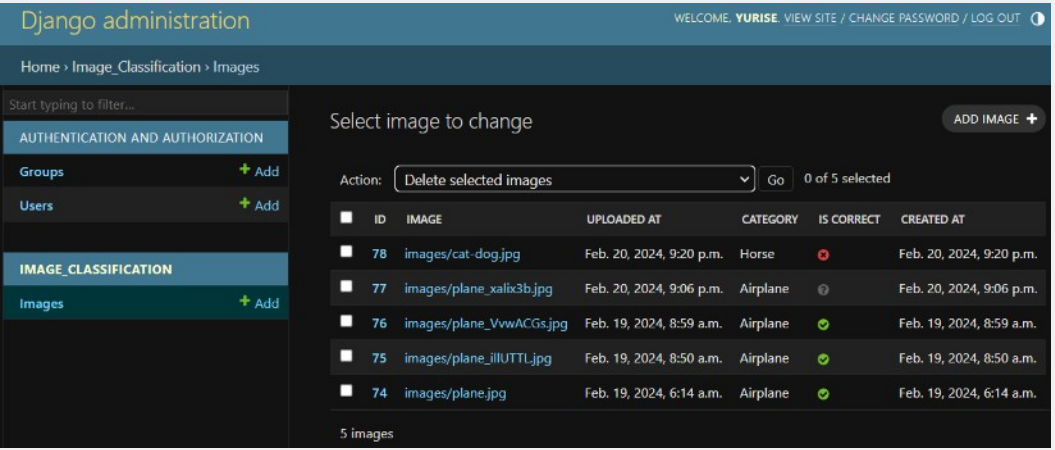
Loss, F1-Score and Accuracy

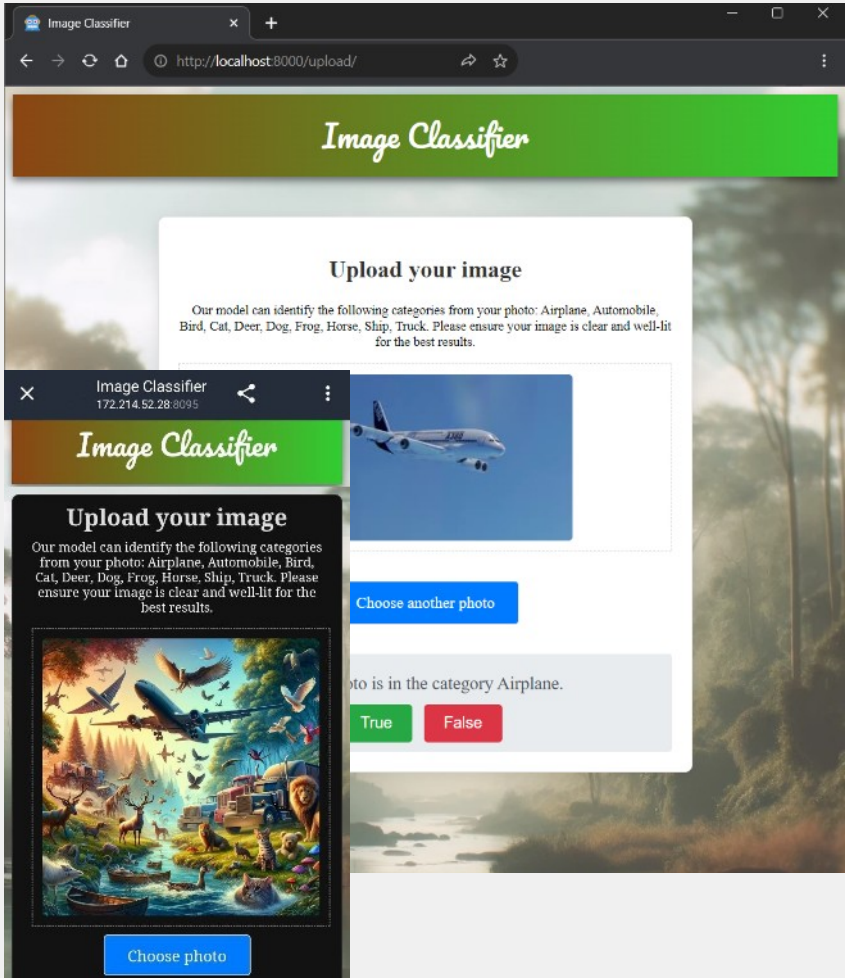
Score											Total
Ac, %	93.1	97.5	89.1	80.1	92.7	84.7	97.2	95.4	94.5	96.4	92.1
F1, %	92.0	98.0	88.9	80.0	92.3	85.5	98.4	93.8	94.5	97.2	92.1



Application Features

- asynchronous engine;
- adaptive layout;
- possibility of providing feedback by the user;
- possibility to check and manage all correct and incorrect classifications by the administrator;
- self-explanatory interface;
- ability to work with images of any size.





Technologies used

Back-end

- ❑ Python
- ❑ Django
- ❑ JavaScript
- ❑ Jupyter Notebook
- ❑ Tensorflow

Front-end

- ❑ HTML
- ❑ CSS
- ❑ JavaScript

Utilities

- ❑ VS Code
- ❑ Git
- ❑ Docker
- ❑ Trello

Web-services

- ❑ GitHub
- ❑ Docker Hub
- ❑ Azure









GO IT

Thank you for attention!

Best regards,
Lonely Debuggers