Mole Detect

.app

http://moledetect.herokuapp.com

Table of contents





01-Introduction

The purpose of the project is to develop a tool that would be able to detect moles that need to be handle by doctors.

The project will be available on a web app where the user could upload a picture of the mole and see the result.

The project will be upload on internet with flask, doker and heroku.

02

The moles

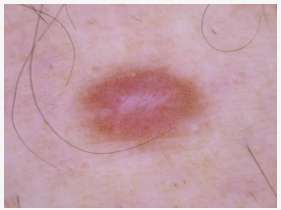
There are 7 types of moles

Mole Types / benign

Actinic keratoses

Benign keratoses-like lesions

Dermatofibroma

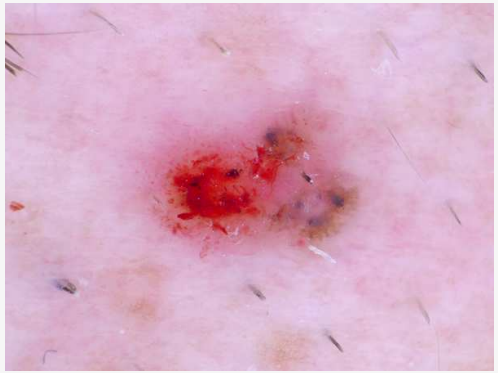


Melanocytic nevi

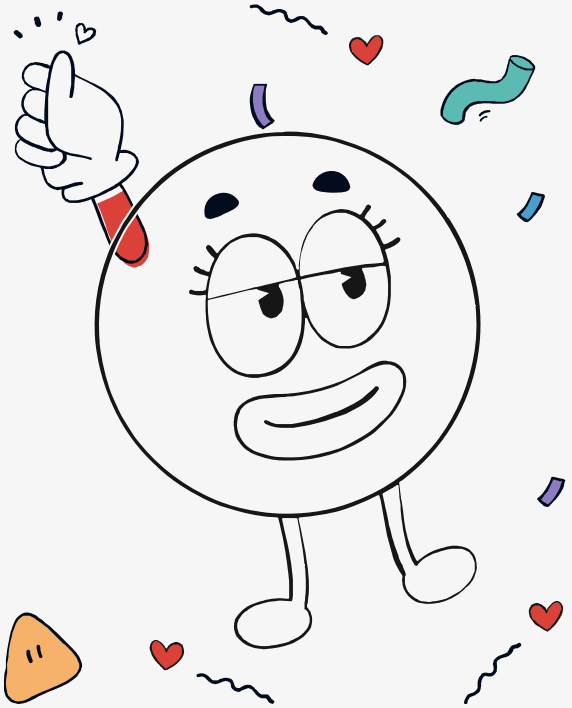
Vascular lesions

Mole Types / malignant

Basal cell carcinoma



Melanoma



03

The data

10k mole images

Problem with the data

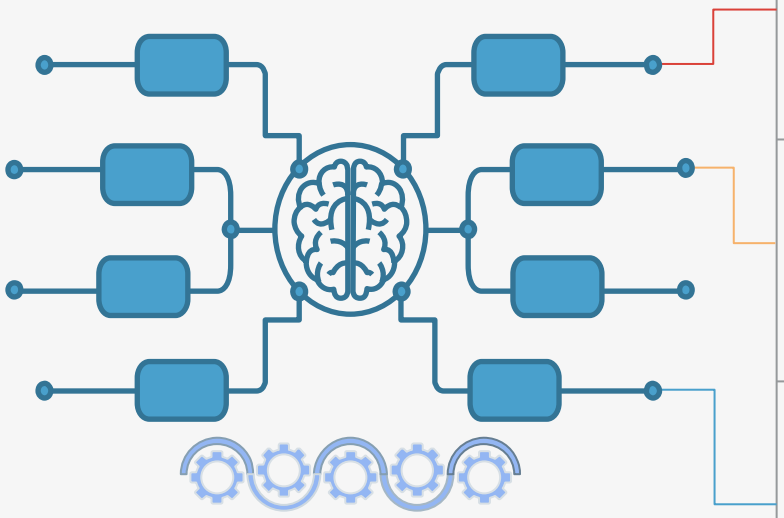
Actinic keratosis (akiec)	327
Basal cell carcinoma (bcc)	514
Benign keratosis-like lesions (bkl)	1.099
Dermatofibroma (df)	115
Melanoma (mel)	1.113
Melanocytic nevi (nv)	6.705
Vascular lesions (vasc)	142

Review of the data

How to deal with overfitting

Class Weights	Resampling	Random Over sampling
{0: 4.37, 1: 2.78, 2: 1.30, 3: 12.44, 4: 1.28, 5: 0.21, 6: 10.07}	n_samples=500	RandomOverSampler()

04-Model



learning_rate

ReduceLROnPlateau (monitor='val_loss', factor=0.1, patience=3)

early_stop

EarlyStopping(monitor='val_loss', patience=8)

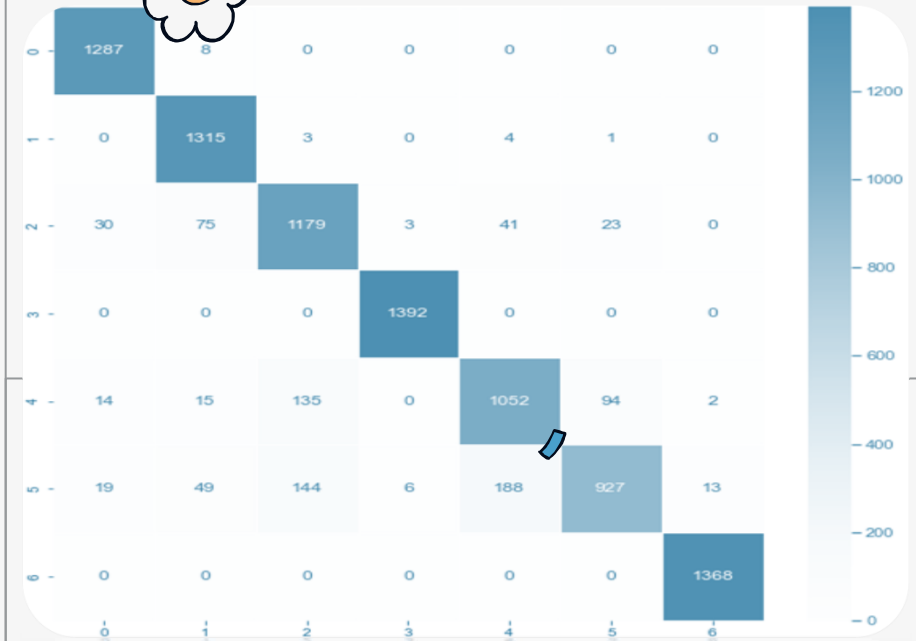
tensorboard

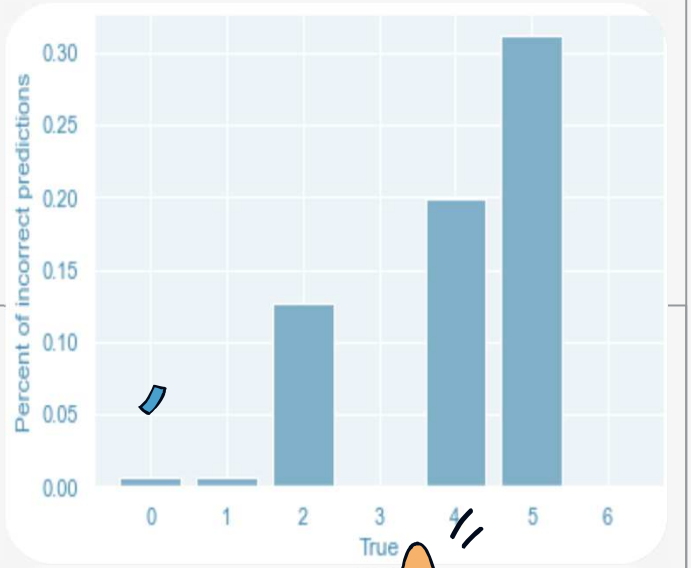
TensorBoard(log_dir='./logs/{}'.format (LOG_DIR))

Classification Report

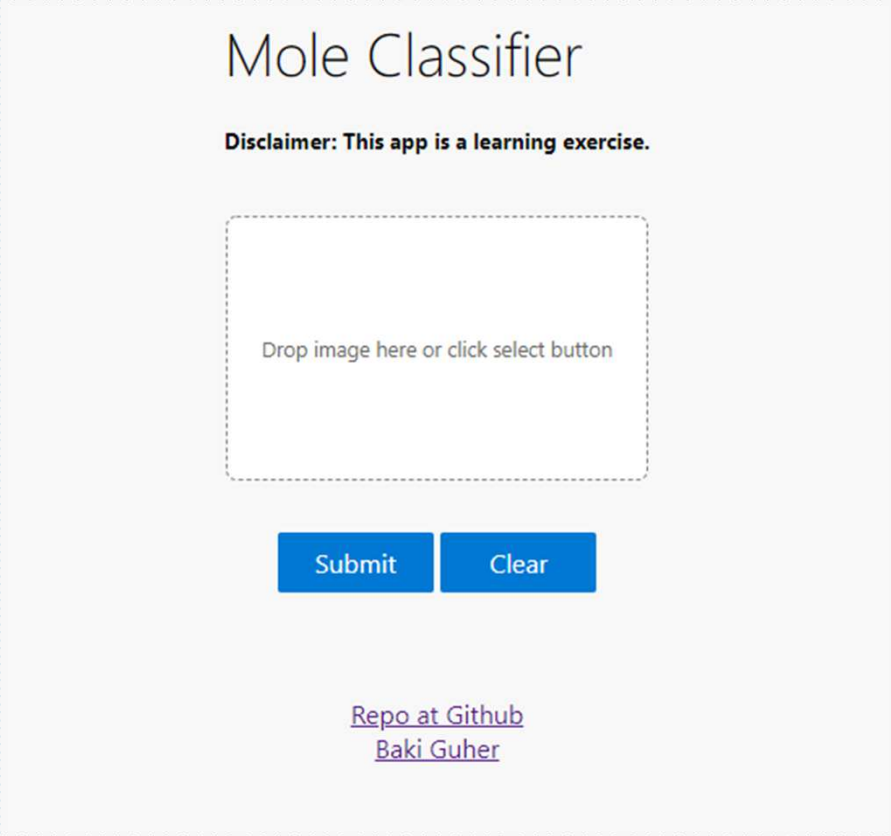
	precision	recall	f1-score	support
Actinic keratoses (akiec)	0.95	0.99	0.97	1295
Basal cell carcinoma (bcc)	0.90	0.99	0.94	1323
Benign keratosis-like lesions (bkl)	0.81	0.87	0.84	1351
Dermatofibroma (df)	0.99	1.00	1.00	1392
Melanoma (mel)	0.82	0.80	0.81	1312
Melanocytic nevi (nv)	0.89	0.69	0.78	1346
Vascular lesions (vasc)	0.99	1.00	0.99	1368
accuracy			0.91	9387
macro avg	0.91	0.91	0.90	9387
weighted avg	0.91	0.91	0.91	9387

Confusion Matrix





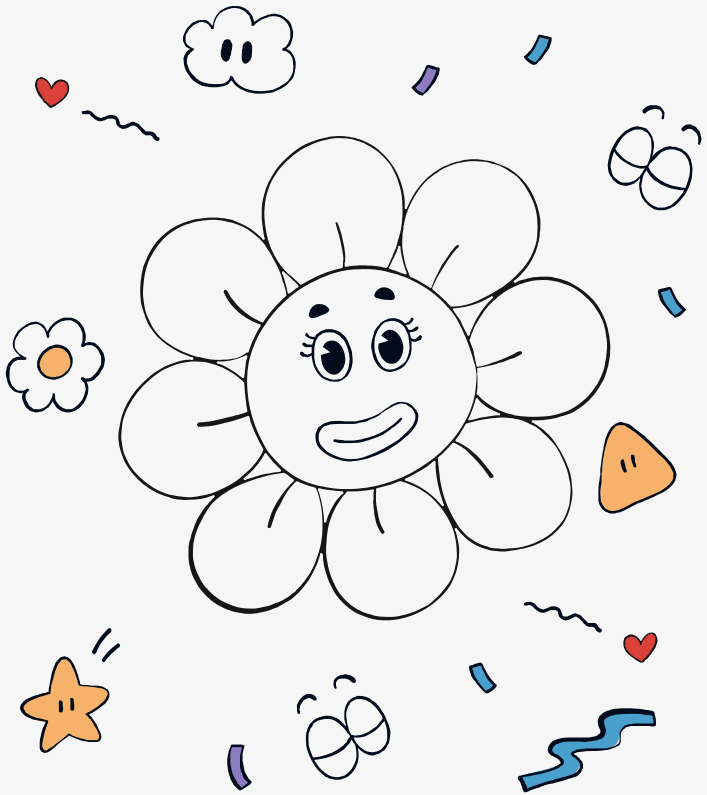
05-The App


Mole Classifier
Disclaimer: This app is a learning exercise.
Drop image here or click select button
Submit
Clear
Repo at Github
Baki Guher

Conclusions

Some of the images from different classes are very close to eachother.

Data imbalance is a big problem, image generation even if it is not adviced can be used only in those classes.



Thanks

Do you have any questions?

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