

CHEST OPACITY CLASSIFICATION

By



Sulaiman Kagumire

2100702296
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Outline

- Data balancing
- Train-valid-test-split
- Image Preprocessing
- Model Architecture
- Results
- Model Evaluation
- Model Testing
- Work in Progress

Data Balancing

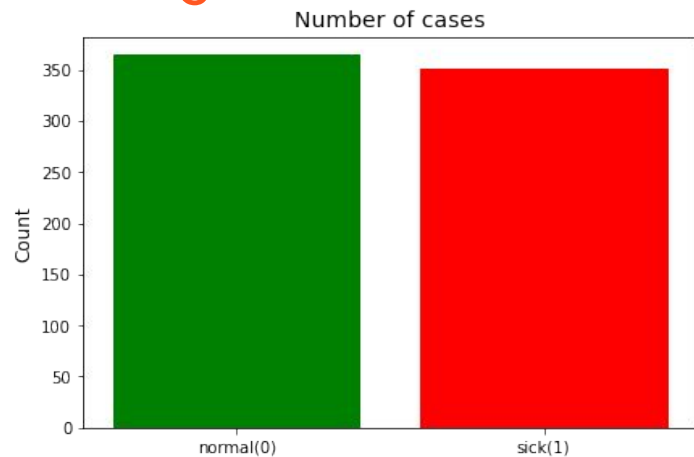


Fig.1 Imbalance Data

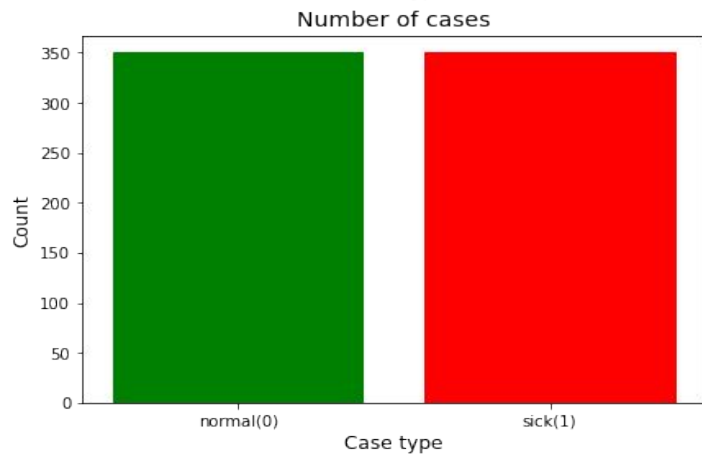
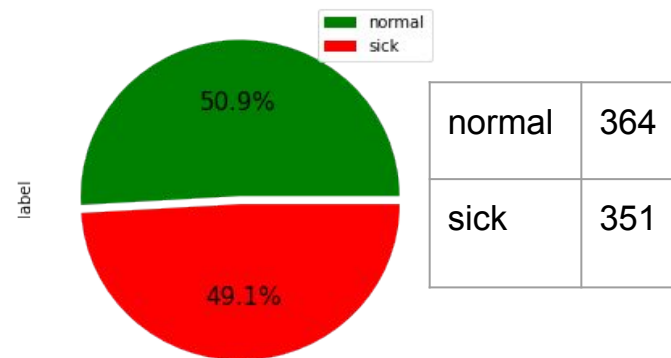
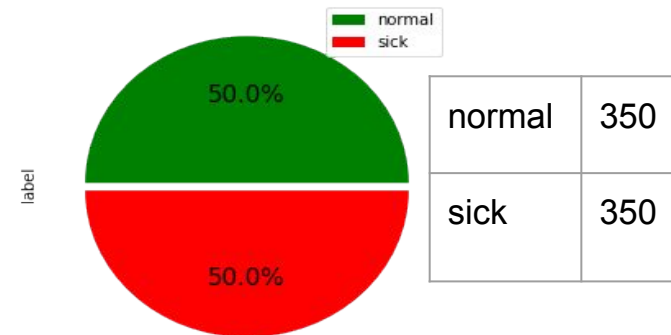


Fig.2 Balanced Data



Train-valid-test-split

	normal	sick	Total
train	224	224	448
valid	70	70	140
test	56	56	112

Image Preprocessing

Image resizing: 150 x 150

Data Augmentation

- Rescaling - Input normalization

Model Architecture

- Model - ResNet50V2

Excluded fully connected layers

Froze trainable layers

Added One Dense layer and output layer - softmax activated

Callbacks

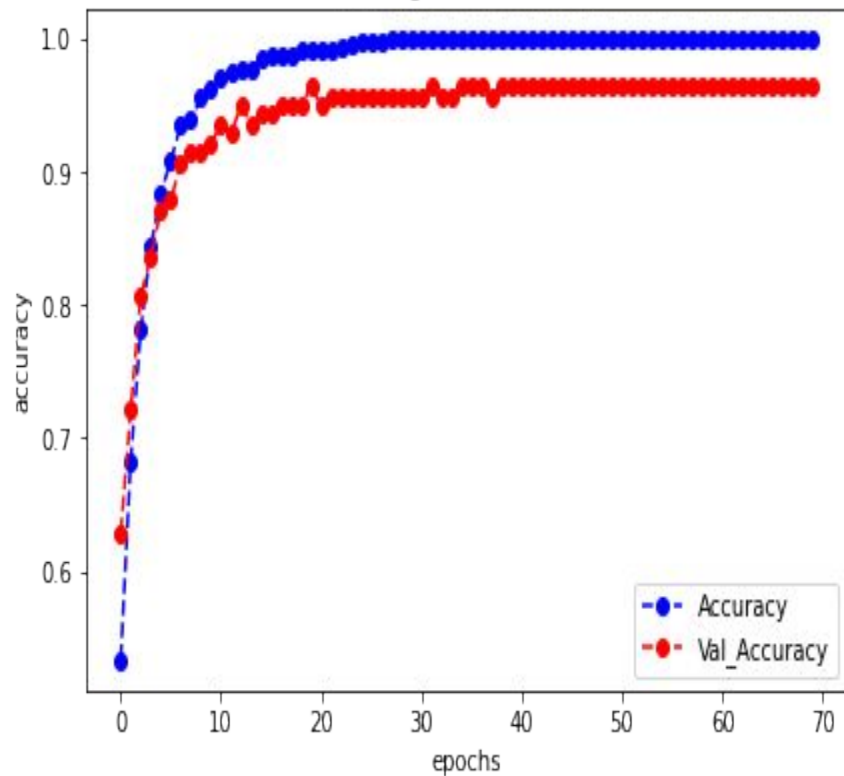
- ReduceOnPlateau
- ModelCheckpoint

Learning rate - 0.0001

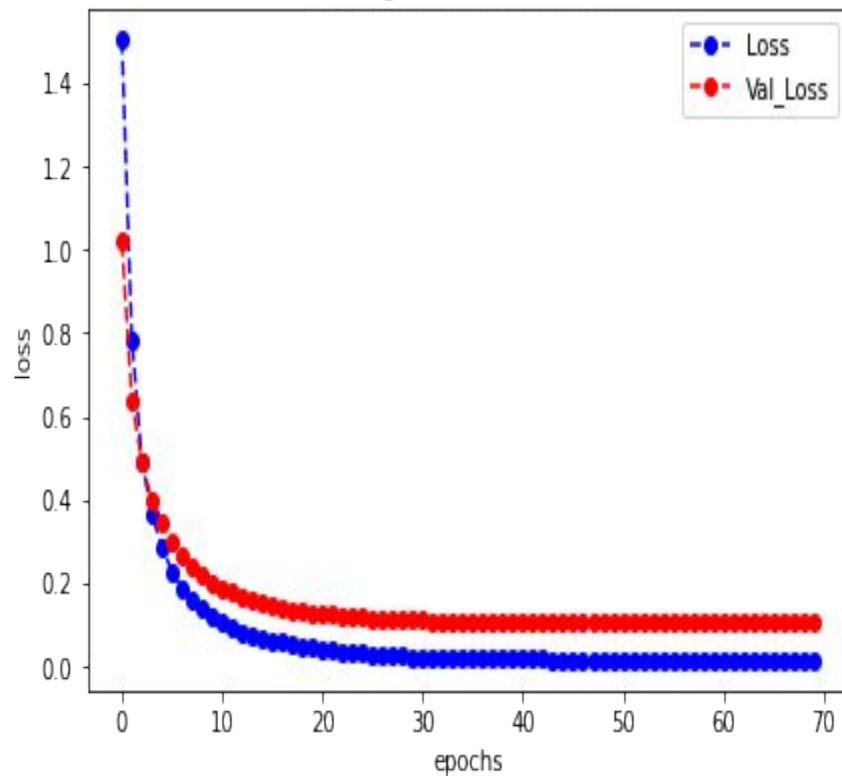
Metrics - *accuracy and AUC* (Area under the ROC curve)

Results

Training and Validation

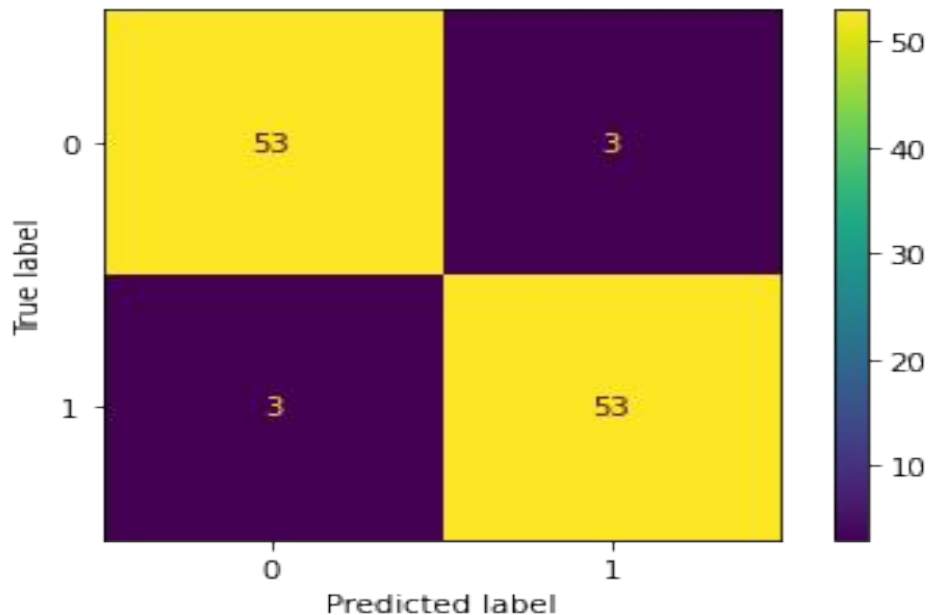


Training and validation loss



Model evaluation

	precision	recall	f1-score	support
0	0.95	0.95	0.95	56
1	0.95	0.95	0.95	56
accuracy			0.95	112
macro avg	0.95	0.95	0.95	112
weighted avg	0.95	0.95	0.95	112

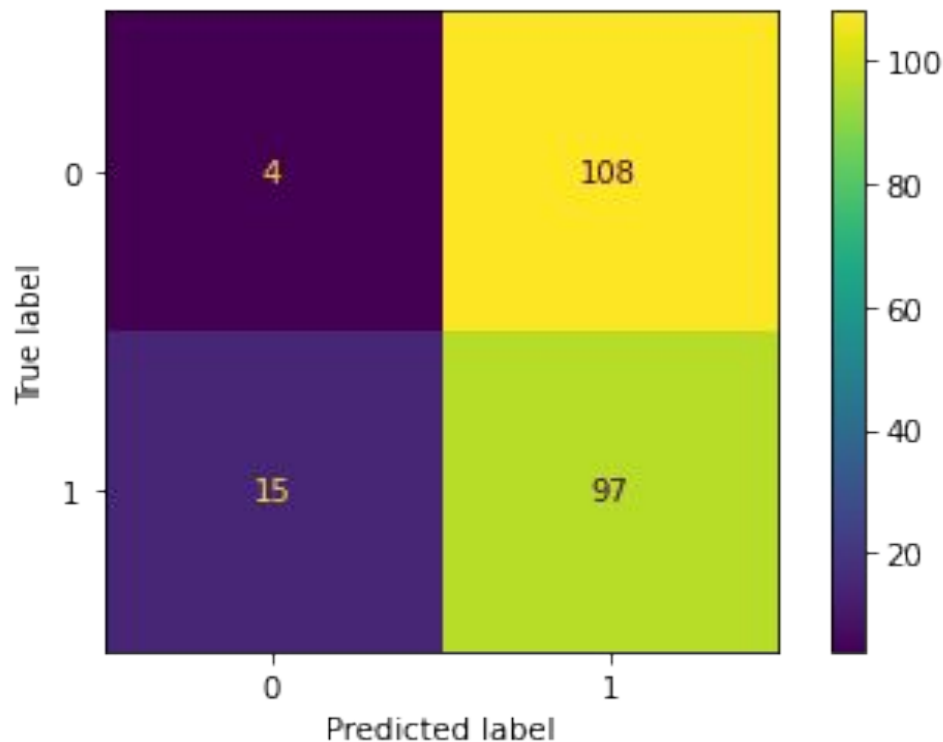


Testing - Unknown images

	Unknown_images	Diagnosis
0	01.png	normal
1	02.png	sick
2	03.png	normal
3	04.png	sick
4	05.png	normal
5	06.png	sick
6	07.png	normal
7	08.png	sick
8	09.png	normal
9	10.png	sick

Testing - Dataset2

	precision	recall	f1-score	support
0	0.21	0.04	0.06	112
1	0.47	0.87	0.61	112
accuracy			0.45	224
macro avg	0.34	0.45	0.34	224
weighted avg	0.34	0.45	0.34	224



Improving performance for dataset2

In Progress

- Using Vision Transformers



THANK YOU