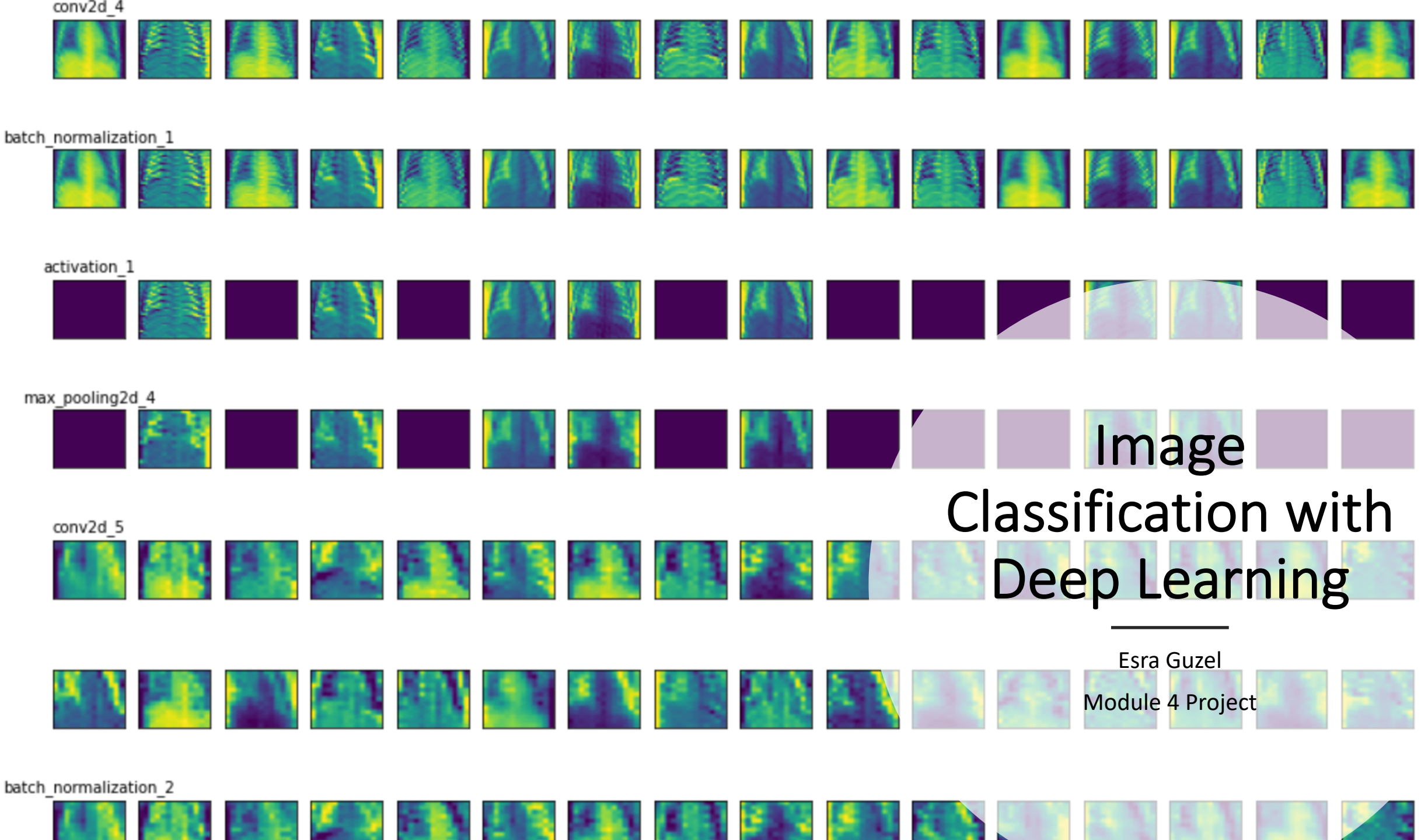
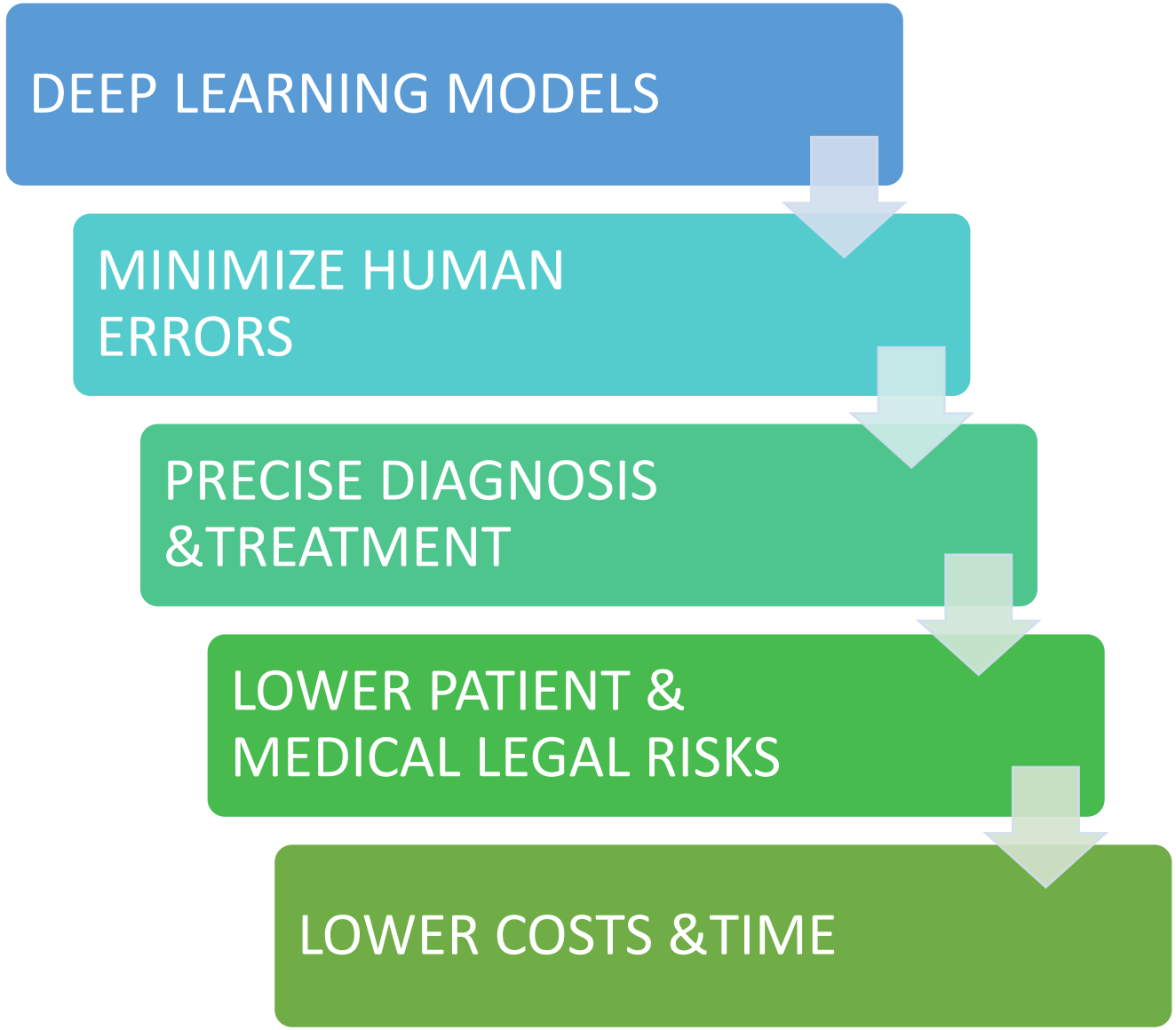


Image Classification with Deep Learning

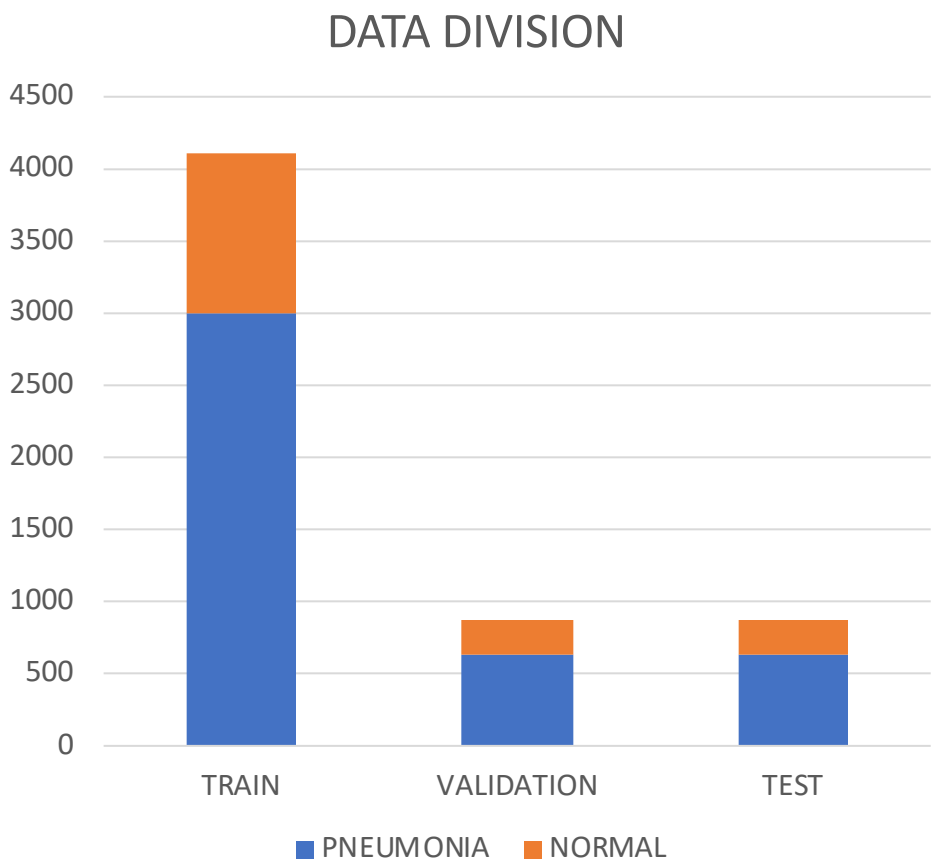
Esra Guzel

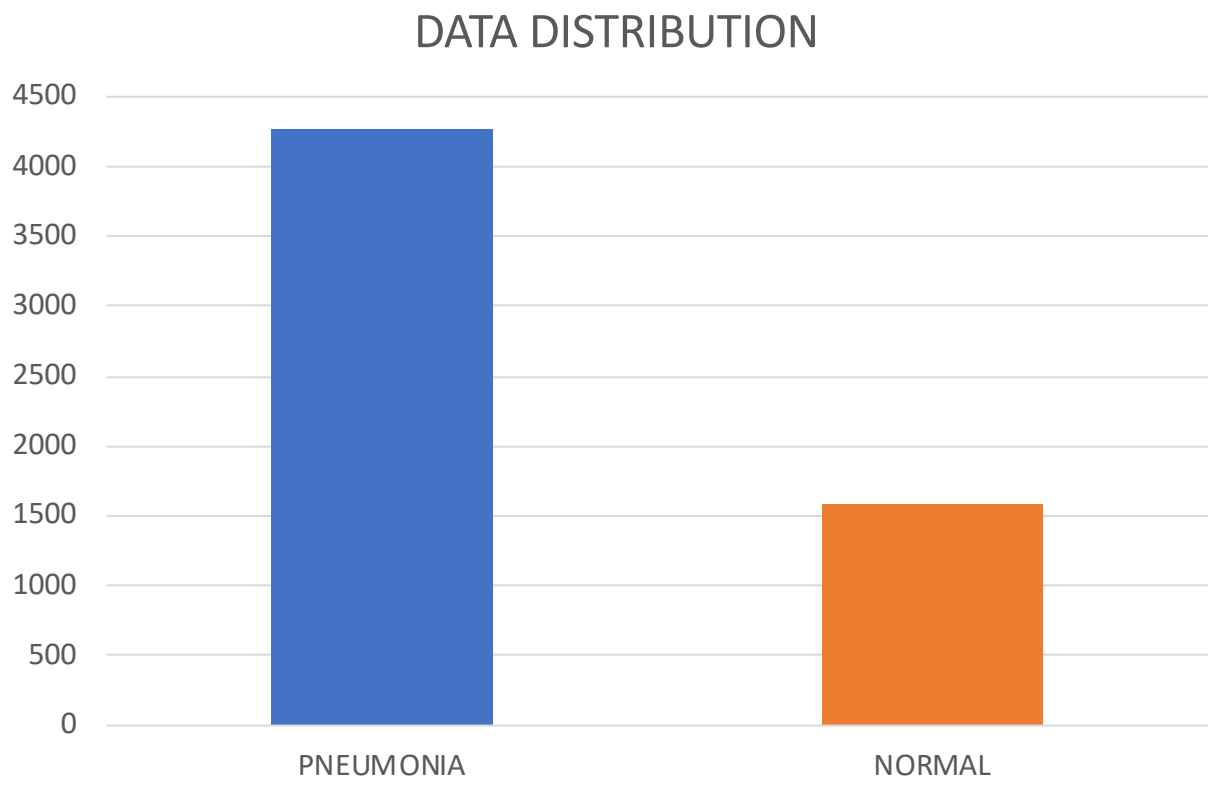
Module 4 Project

BUSSINES UNDERSTANDING



DATA UNDERSTANDING





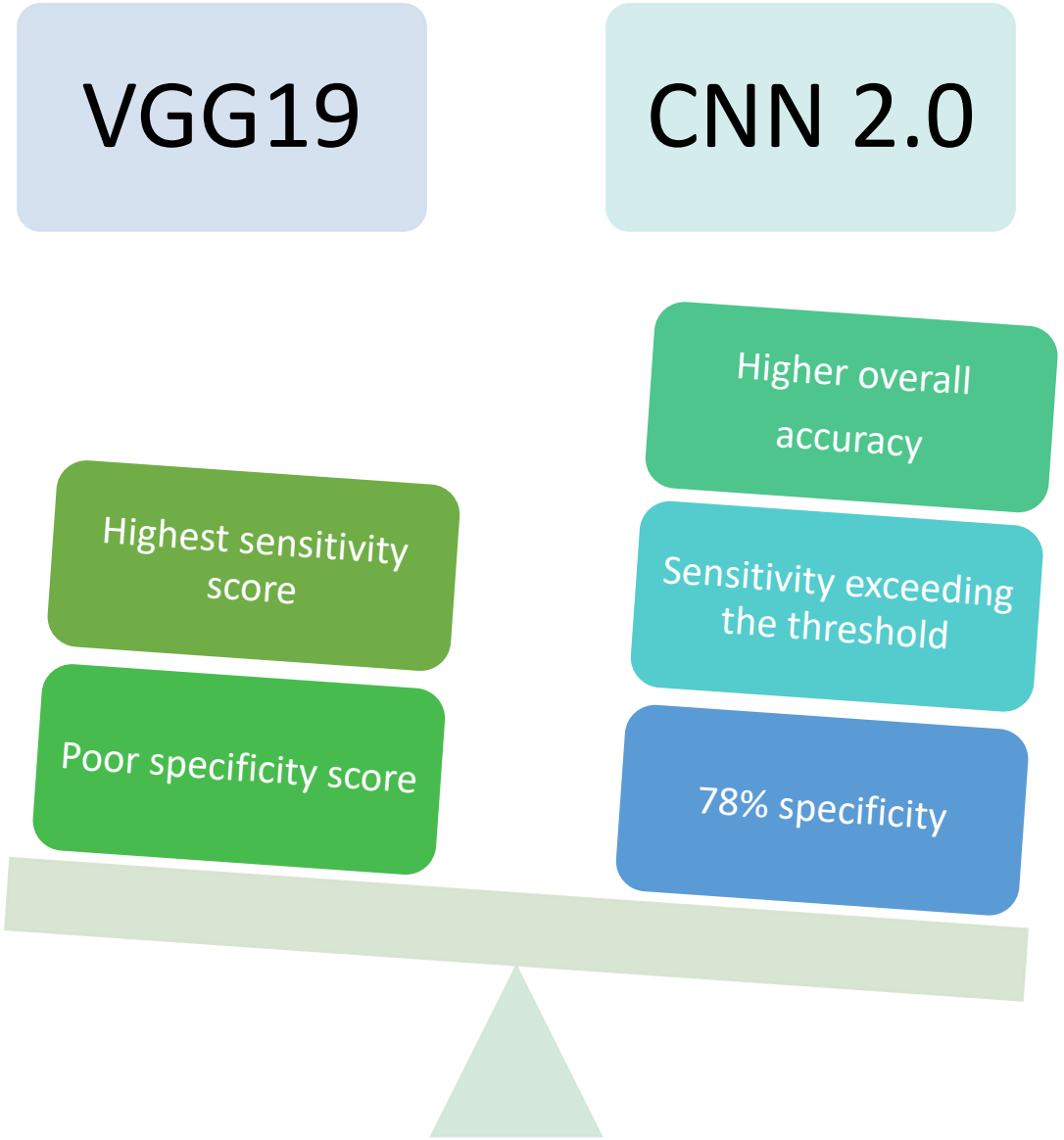
MODELLING METHODOLOGY

- Dataset divided into 3 sets train, test and validation
- 7 different models applied to the dataset
- For each model not just accuracy, recall scores for each label are used as evaluation metrics
- Oversampling technique is used to boost accuracy and recall scores
- 95 % of Sensitivity score and 90 % of Specificity score are set as threshold

MODEL COMPARISON

	Baseline Model	Regularized Model	CNN Model	Deep CNN Model	Xception Model	VGG16 Model	VGG19 Model
Accuracy	0.87	0.90	0.90	0.91	0.89	0.89	0.88
Sensitivity	0.99	0.98	0.98	0.97	0.99	1.0	0.90
Specificity	0.56	0.70	0.70	0.74	0.63	0.62	0.83

CNN 2.0 vs VGG19



The model should be used as a tool by medical experts and specialists which will support their diagnosis and treatment method.

To reach higher levels of accuracy and recall score oversampling techniques should be used.

The Dataset can be enriched, and the target variable can be balanced by oversampling methods.

Different pretrained models can be trained to observe accuracy and recall scores.

The model can be trained to detect the cause of pneumonia (bacteria or virus).

RECOMMENDATIONS & FUTURE WORK

THANK YOU

ANY QUESTIONS?