# ResNet Age Binary Classification Models

## Validation

### DB = 0.5

A table with numbers and letters

Description automatically generated

### DB = 0.2

A table with numbers and letters

Description automatically generated

Low decision boundary maximises recall / minimises precision. High false positive rate

### DB = 0.8

A screenshot of a graph

Description automatically generated

High decision boundary maximises precision / minimises recall.

Models with more parameters often produce outputs closer to 0.0 and 1.0, while those with fewer parameters rarely achieved confidence close to the extremes – so an extreme decision boundary results in classifying entirely as one class.

### Looking at high-parameter models

A higher decision boundary will maximise precision, while still maintaining good recall. The following models are those with a large number of parameters. These model output values close to the extremes, so the decision boundary can be further from 0.5

#### DB = 0.8

A table with numbers and text

Description automatically generated

#### DB = 0.9

A screenshot of a graph

Description automatically generated

At this point we start to see a significant drop in the recall

#### DB = 0.7

A screenshot of a graph

Description automatically generated

A good boundary for the high-parameter models seems to be around 0.7

### Looking at low-parameter models

The following models have a lower number of parameters, and output values spread across the range 0.0-1.0. The decision boundary should be closer to 0.5 for these, with higher decision boundaries likely increasing precision.

#### DB = 0.5

A table with numbers and letters

Description automatically generated

#### DB = 0.7

A screenshot of a graph

Description automatically generatedWe can see that this has too much of an impact on recall – most predictions are class 0.

#### DB = 0.4

A table with numbers and text

Description automatically generated

FPR is quite high, best boundary is likely around 0.5.

## Test

We will use a DB of 0.7 for high-parameter models, and 0.5 for low-parameter models. We will take two the best performing models from both categories.

High-parameter models: 6, 7

Low-parameter models: 3, 11

### High-parameter models

A screenshot of a calculator

Description automatically generated

A graph of a line and a line

Description automatically generated with medium confidence

A screenshot of a computer

Description automatically generated

### Low-parameter models

A screenshot of a graph

Description automatically generated

A graph of a graph of a number of numbers

Description automatically generated with medium confidence

A screenshot of a computer

Description automatically generated