How Computer Vision can help Dementia patients stay safer
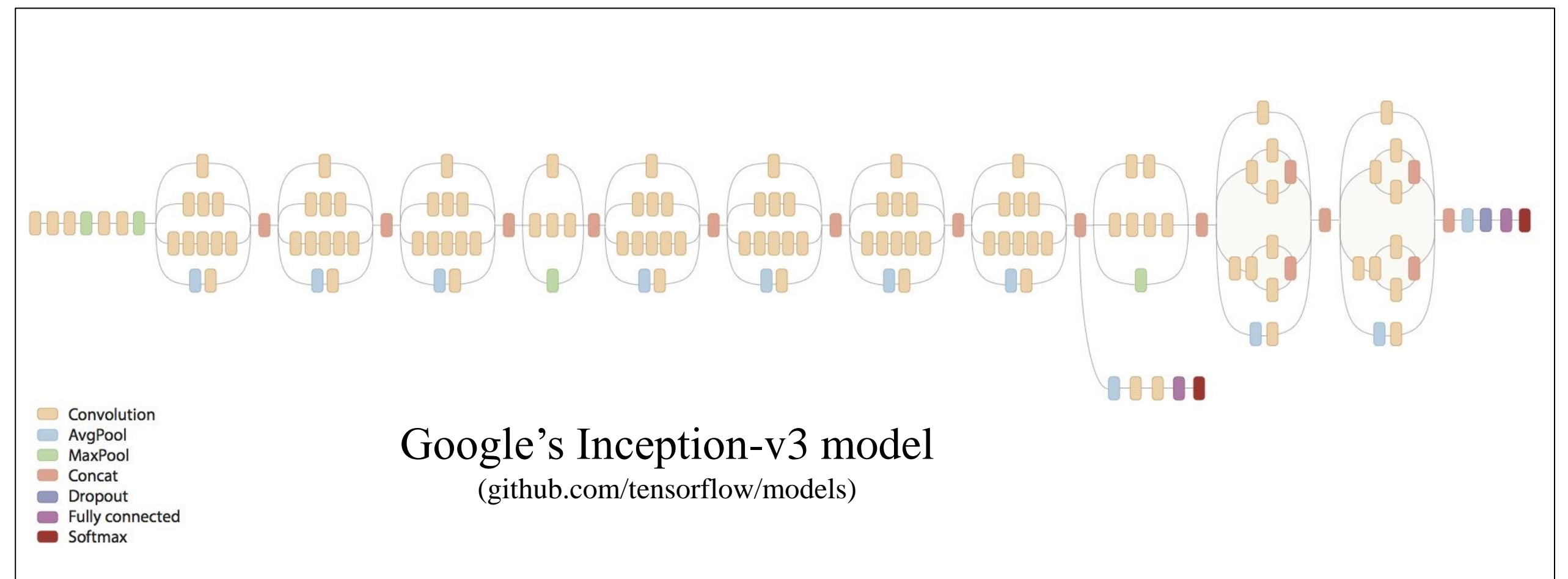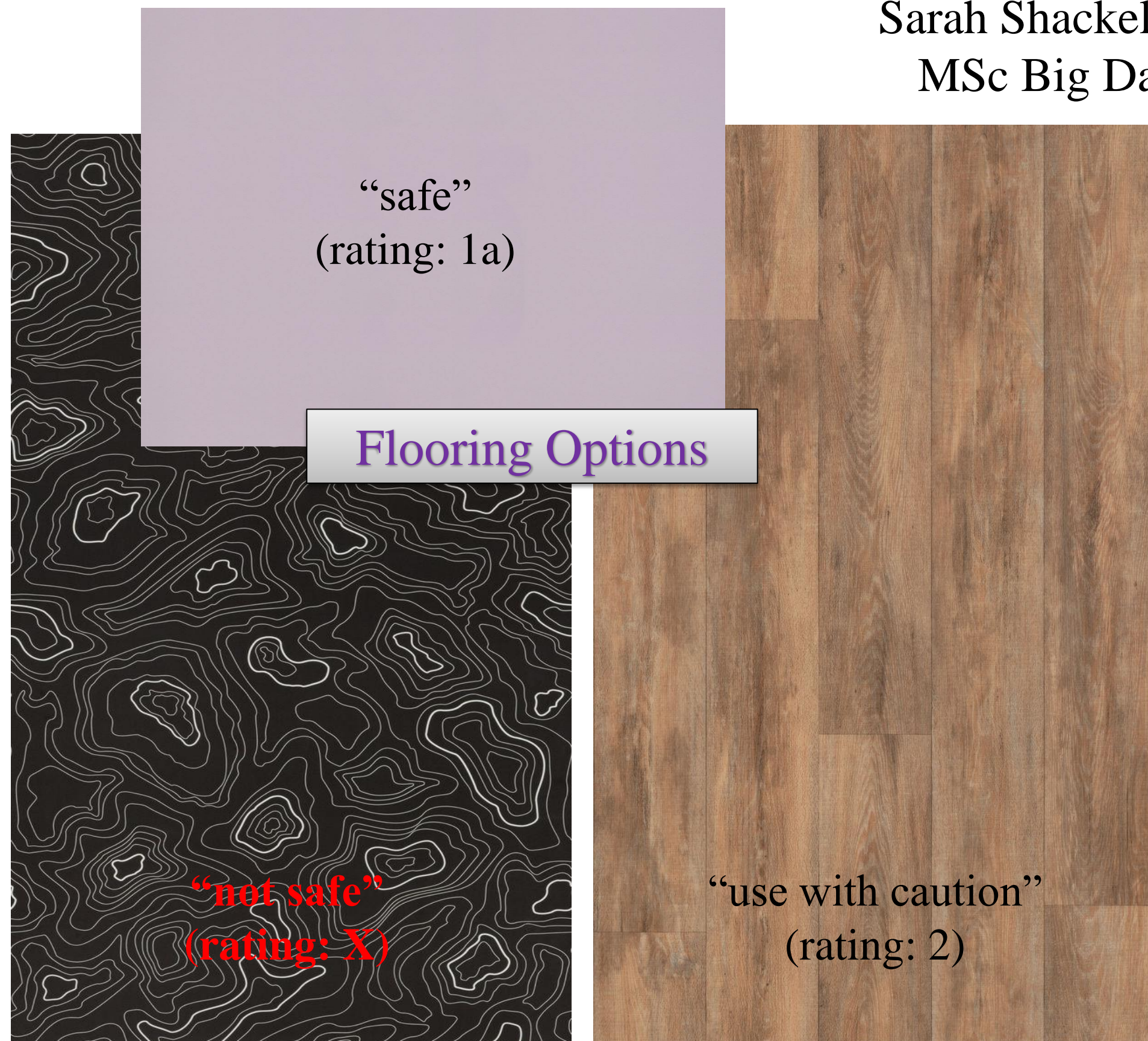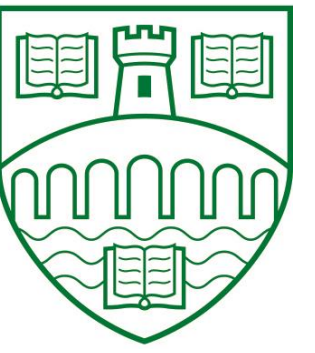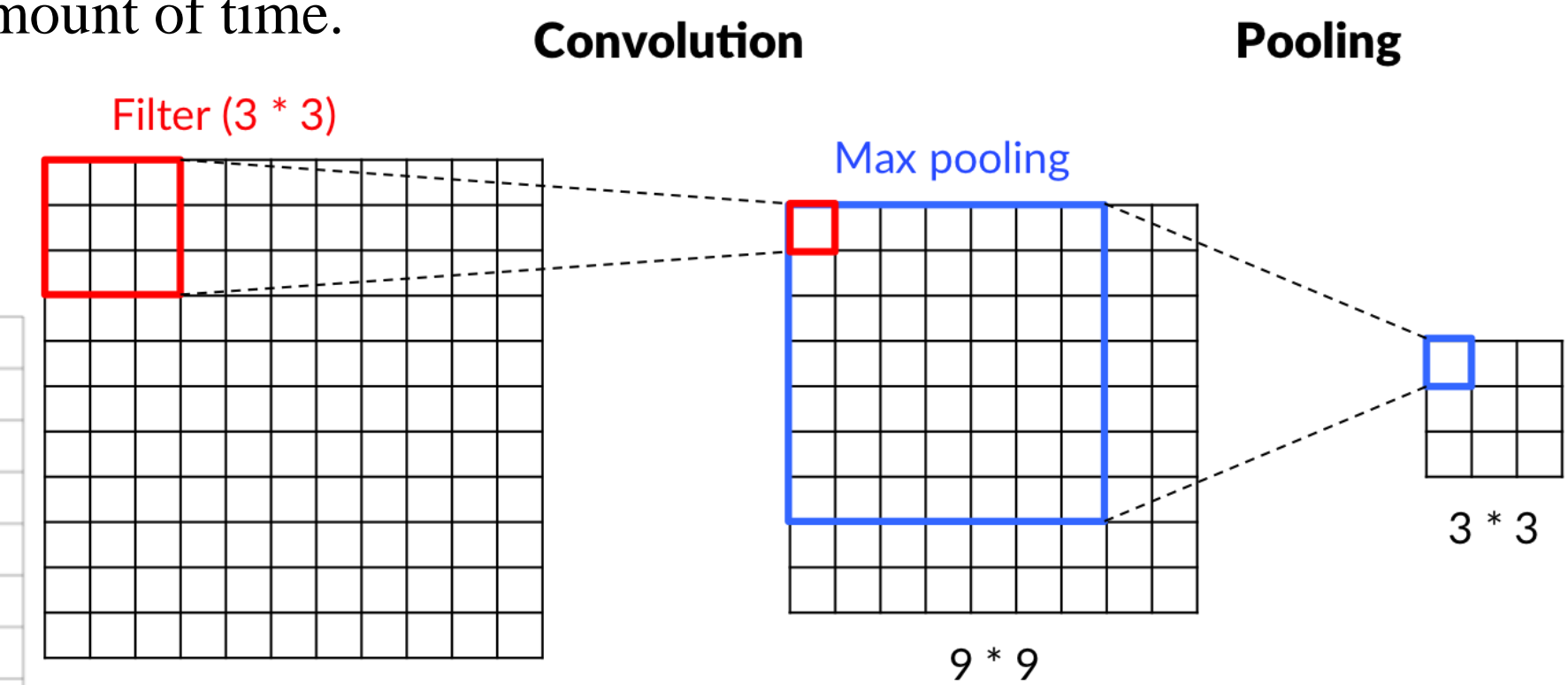
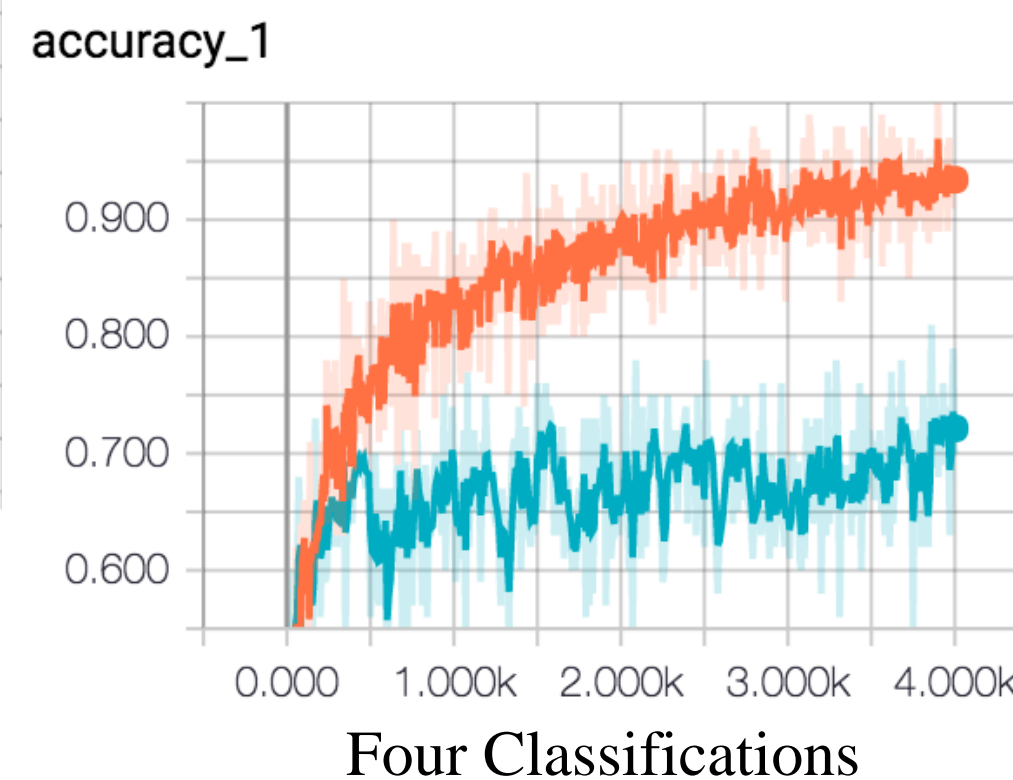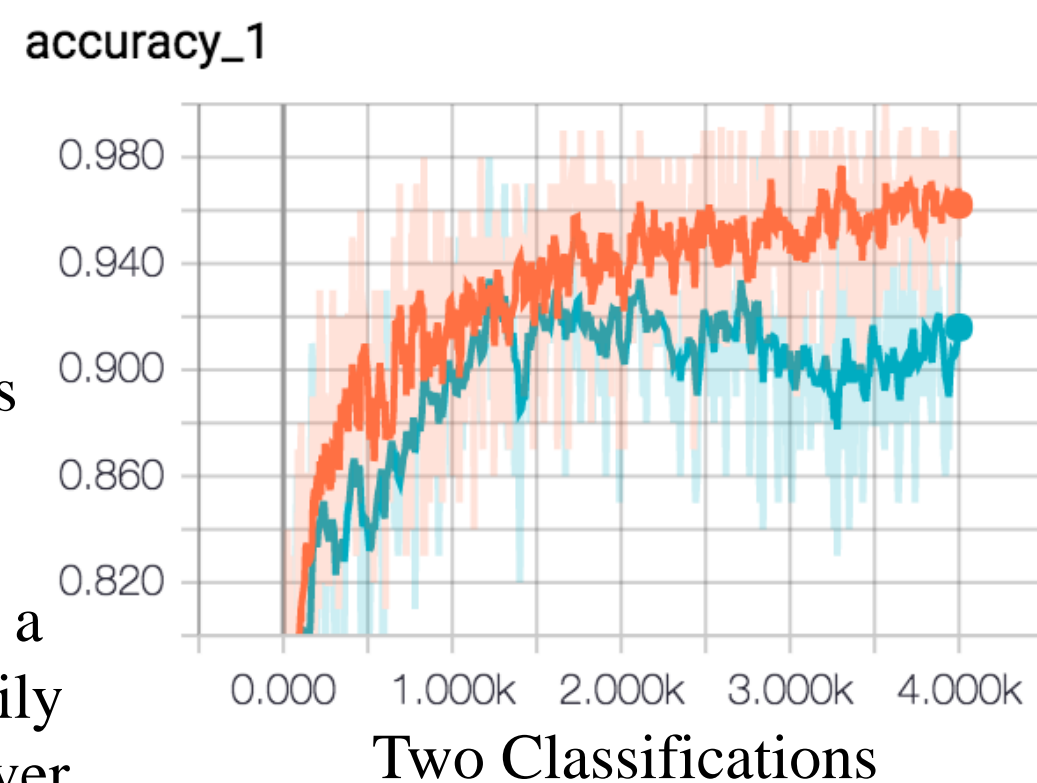Sarah Shackelford
MSc Big Data

UNIVERSITY *of* STIRLING

"safe"
(rating: 1a)

Flooring Options

**"not safe"
(rating: X)**

"use with caution"
(rating: 2)

Google's Inception-v3 model
(github.com/tensorflow/models)

Convolution
AvgPool
MaxPool
Concat
Dropout
Fully connected
Softmax

Using TensorFlow and a pre-trained Inception-v3 model, one is able to obtain considerably high accuracy in a short amount of time.

- Dementia is a set of symptoms that are often caused by diseases such as Alzheimer's or a stroke (www.alzheimers.org.uk)
- One of the many symptoms can be a decrease in visuospatial skills
- Neural Networks built into a mobile app could help family members or builders discover "safe" and "not safe" decorative features in a home.

accuracy_1

0.980
0.940
0.900
0.860
0.820

0.000   1.000k   2.000k   3.000k   4.000k

Two Classifications

accuracy_1

0.900
0.800
0.700
0.600

0.000   1.000k   2.000k   3.000k   4.000k

Four Classifications

Convolution   **Pooling**

Filter (3 * 3)

Max pooling

3 * 3

11 * 11   9 * 9

Convolution and Pooling Layers used in CNNs
(saitoxu.io/2017/01/01/convolution-and-pooling.html)