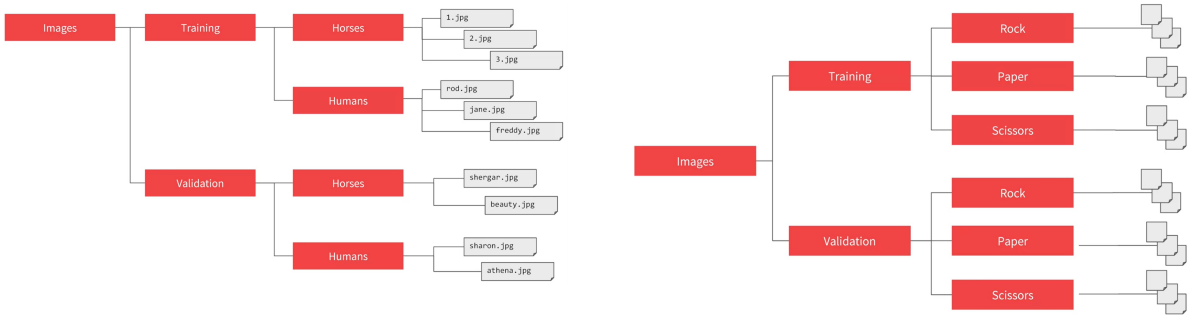
Week 4

From Binary to Multi-Class

- Compared to the horses and humans



Rock, Paper, Scissor class

- A difference compared to previous code during is using "categorical" instead of "binary"

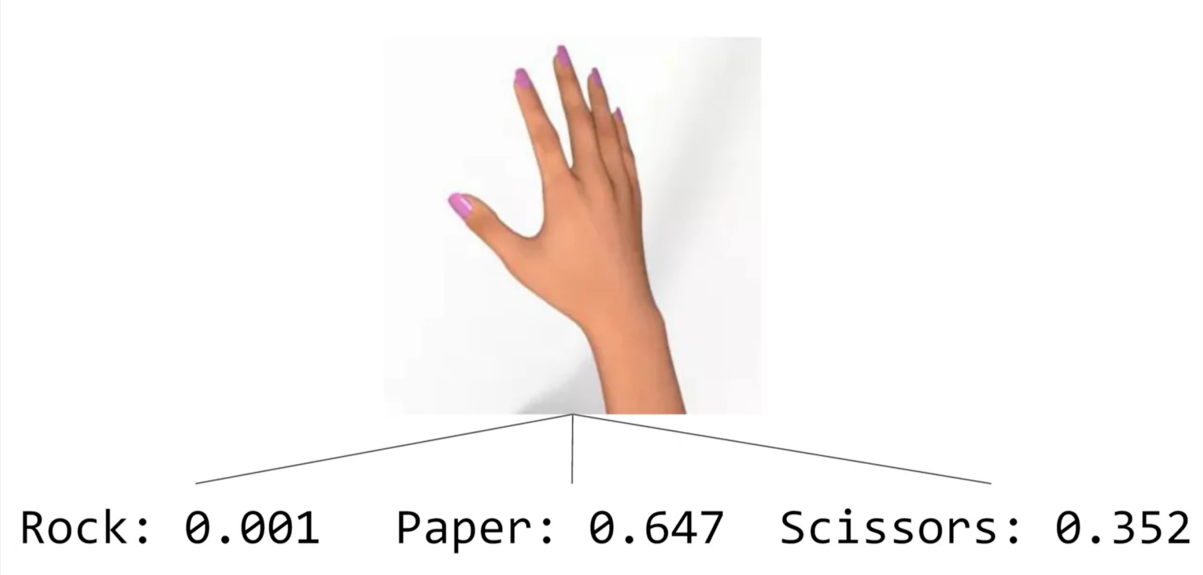
```
train_datagen = ImageDataGenerator(rescale=1./255)

train_generator = train_datagen.flow_from_directory(
        train_dir,
        target_size=(300, 300),
        batch_size=128,
        class_mode='categorical')
```

- In model definition, instead of using sigmoid use softmax with 3 neurons for output

```
model = tf.keras.models.Sequential([
    tf.keras.layers.Conv2D(16, (3,3), activation='relu',
                           input_shape=(300, 300, 3)),
    tf.keras.layers.MaxPooling2D(2, 2),
    tf.keras.layers.Conv2D(32, (3,3), activation='relu'),
    tf.keras.layers.MaxPooling2D(2,2),
    tf.keras.layers.Conv2D(64, (3,3), activation='relu'),
    tf.keras.layers.MaxPooling2D(2,2),
    tf.keras.layers.Flatten(),
    tf.keras.layers.Dense(512, activation='relu'),
    tf.keras.layers.Dense(3, activation='softmax')
])
```

- The image below visualizes an example



- The finial change is during compiling the network, instead of "binary_crossentropy" for loss, use "categorical_crossentropy"

```
from tensorflow.keras.optimizers import RMSprop

model.compile(loss='categorical_crossentropy',
              optimizer=RMSprop(lr=0.001),
              metrics=['acc'])
```

Code for Rock Paper Scissor

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Weekly Test

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