

# Visual Classification Models

Since our project idea is to identify shoes using image recognition, it would be beneficial for us to use a Convolutional Neural Network (CNN) since they are effective at learning features from visual data. As a result, the models listed below are all CNNs which have their own unique benefits and drawbacks. The model we'll be implementing depends on whether we want to prioritise accuracy, efficiency or a bit of both.

Model	Pros	Cons
ResNet	<ul style="list-style-type: none"><li>• Strong accuracy</li><li>• Very popular in image classification</li></ul>	<ul style="list-style-type: none"><li>• Its large model size may impact memory and processing speed on mobile devices</li></ul>
DenseNet	<ul style="list-style-type: none"><li>• Effective at capturing minute details in images</li><li>• Moderate model size with good accuracy</li></ul>	<ul style="list-style-type: none"><li>• Might require more memory compared to less complex models</li></ul>
EfficientNet	<ul style="list-style-type: none"><li>• Different variants of the model are available based on the resources available</li><li>• Achieves high accuracy in various scenarios</li></ul>	<ul style="list-style-type: none"><li>• May require more computational resources compared to less complex models</li></ul>
MobileNetV2	<ul style="list-style-type: none"><li>• Lightweight and optimised for mobile devices</li><li>• Balances accuracy and efficiency</li><li>• Good for real-time applications</li></ul>	<ul style="list-style-type: none"><li>• Accuracy may suffer compared to more complex models</li></ul>
Vision Transformers (ViTs)	<ul style="list-style-type: none"><li>• Good performance in image classification tasks</li><li>• Can capture fine details in images</li></ul>	<ul style="list-style-type: none"><li>• Requires more training data than other models for it to be effective</li><li>• May be computationally demanding compared to other models</li></ul>
InceptionV3	<ul style="list-style-type: none"><li>• Achieves good accuracy with moderate computational requirements</li></ul>	<ul style="list-style-type: none"><li>• Model size and complexity might impact performance on mobile devices</li></ul>
SqueezeNet	<ul style="list-style-type: none"><li>• Extremely lightweight with small memory requirements</li></ul>	<ul style="list-style-type: none"><li>• Accuracy may be compromised due to lightweight model size</li></ul>