Image Classification

Classify products using images

The problem

Context

- Images are one of the major sources of data in the field of data science and AI
- India e-commerce will reach US$ 99 billion by 2024, selling mostly fashion, accessories and electronics

Problem statement

To build a deep learning-based Image Classification model on images that will be scraped from e-commerce portal.

Scrape the data from amazon.in, then train a Deep Learning model on that data.

Challenges deep-dive

Challenge 1

Scraping the data

Deep learning models require lots of data to train from scratch.

Challenge 2

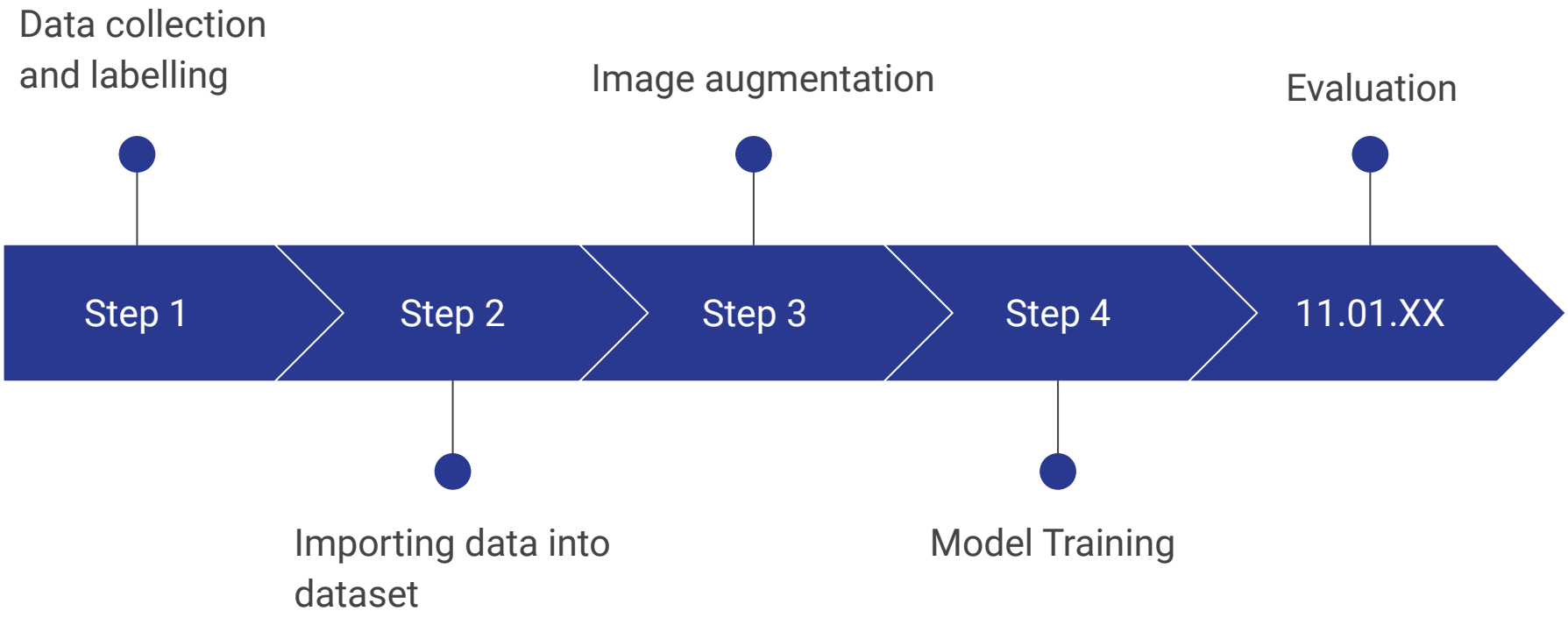
Making the data ready for training

Images cannot be directly fed into the model, it has to undergo some preprocessing

Challenge 3

Model Building

A simple model won't give good accuracy, so we need to fine-tune a pretrained model.


Data collection and labelling
Image augmentation
Evaluation
Step 1
Step 2
Step 3
Step 4
11.01.XX
Importing data into dataset
Model Training

Some examples for each labels

Men’s Jeans

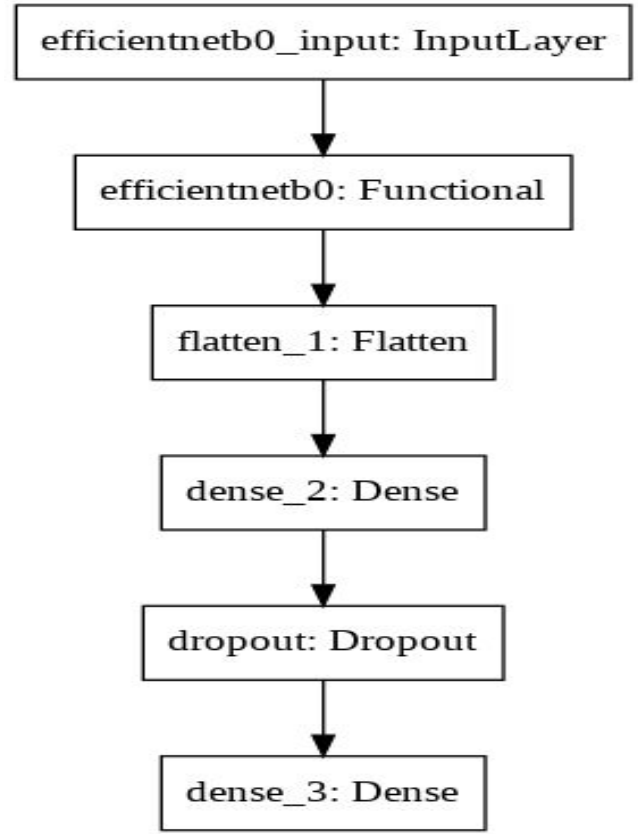
Some examples for each labels

Men’s Trouser

Some examples for each labels

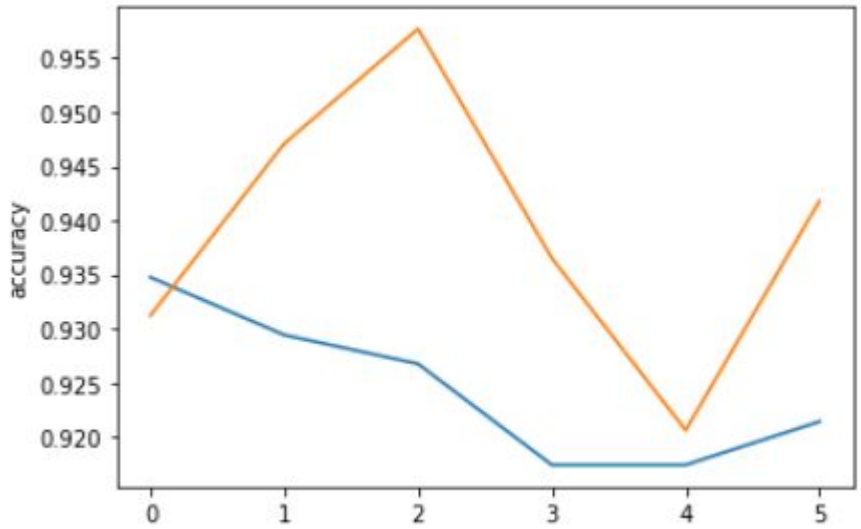
Saree

Model Structure



Model Evaluation

The model got a training accuracy of 92% and testing accuracy of 94%. Which tells us the model generalizes well.



Conclusion

- Images are one of the major sources of data in the field of data science and AI
- Convolutional Neural Networks are very successful in executing Computer Vision applications
- Image Augmentation can be used to add more images when the dataset is small.
- Transfer Learning can be used to train a very complex model trained on a massive dataset and be used for similar kinds of applications easily. Model trained on one problem is used in some way on a second related problem.
- Using EfficientNet model trained on ImageNet dataset, and fine-tuning it for our application, we achieved an accuracy of 94.2%