

# **IMAGE BASED PRODUCT RECOMMENDATION SYSTEM**



# OVERVIEW

- Existing search engines
  - Users' profiles (demographic filtering),
  - Similar neighbors' (collaborative filtering)
  - Textual description (content-based model)



# USE-CASE

- Search based on

Existing  
Image



Upload  
Image

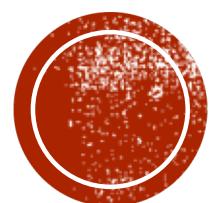


# WHY THIS IS A PROJECT RELATED TO THIS CLASS ?

- Our module is divided into 2 parts:
  - Classification
  - Recommendation

Seed	Visually Similar Products				
					
					
					
					

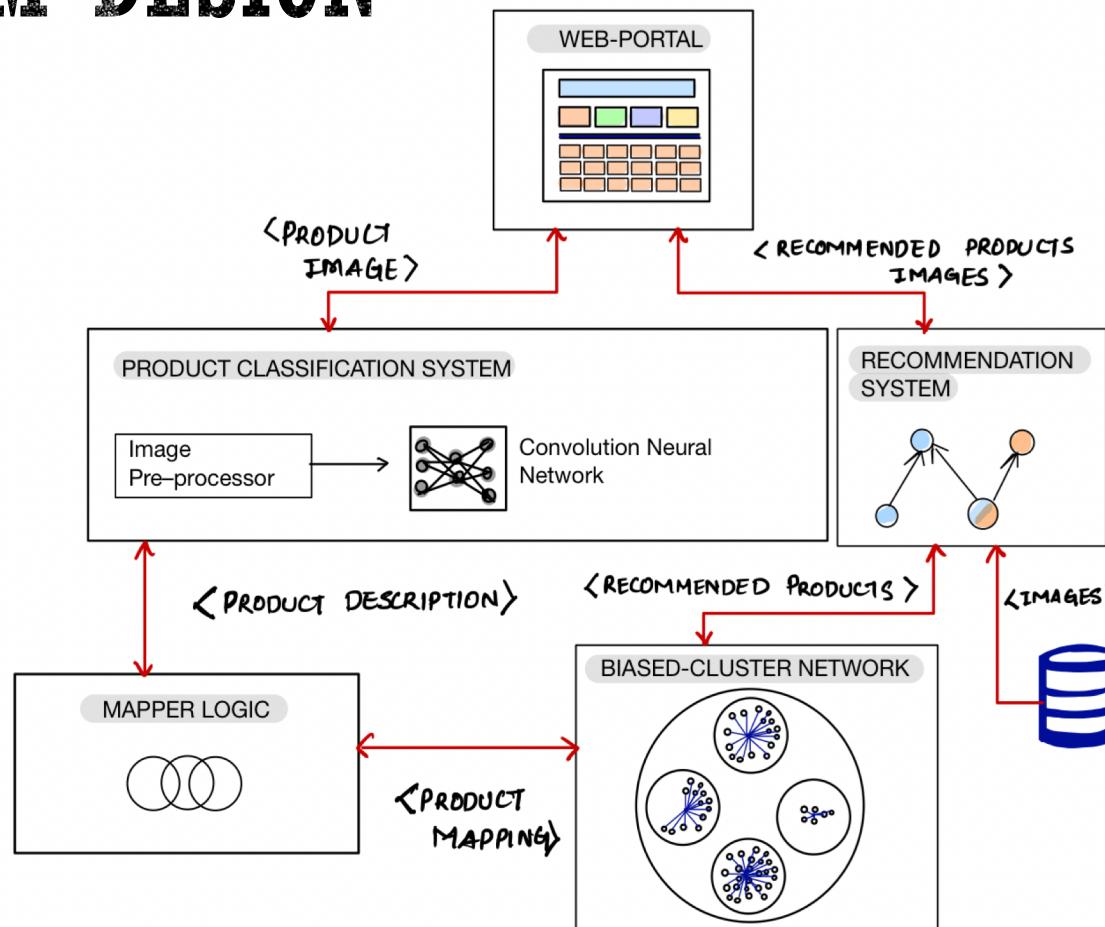




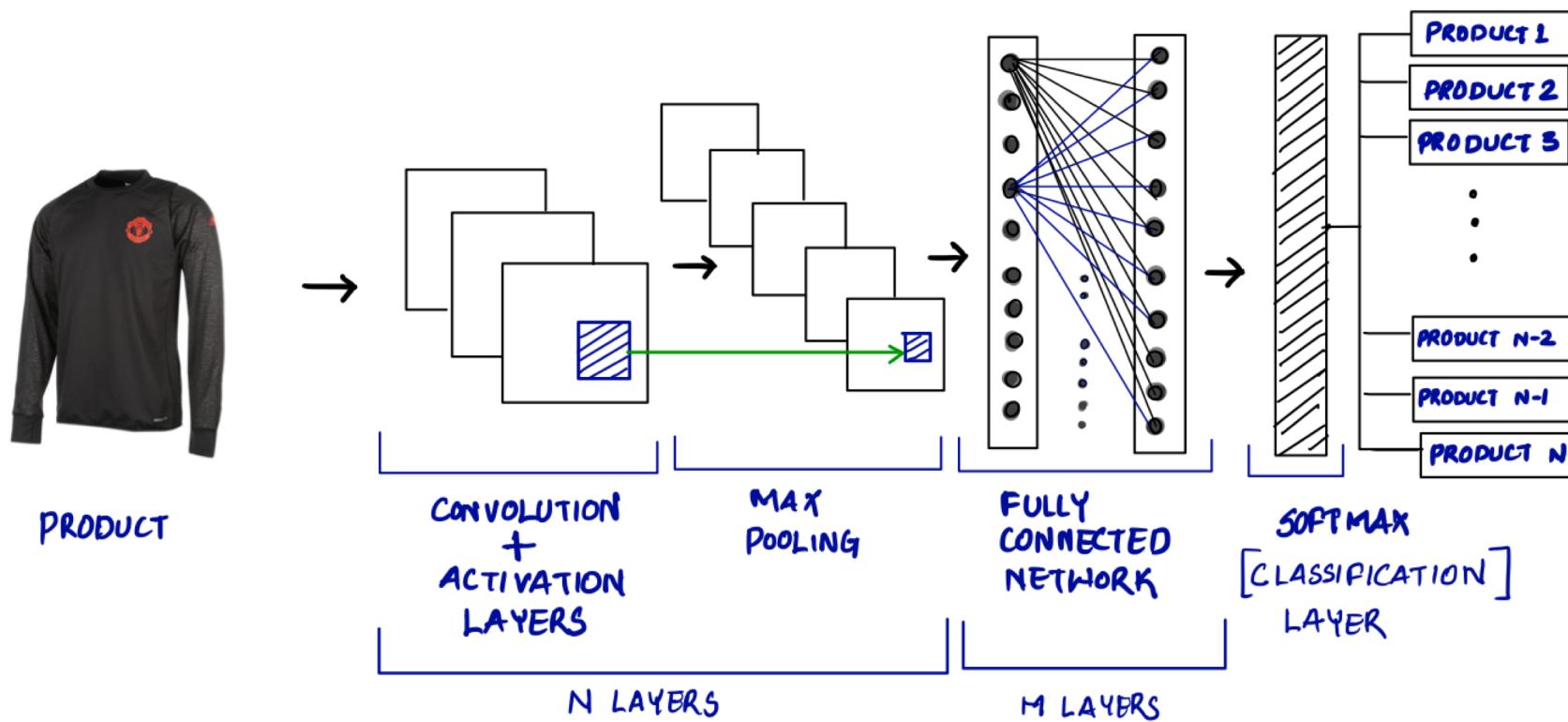
# **SYSTEM ARCHITECTURE AND DESIGN**



# SYSTEM DESIGN



# CNN ARCHITECTURE (SHALLOW NET)



Activation Layer : Rectified Linear Unit “ReLU”



# CNN TRAINING

- **Training Hyper-Parameters**

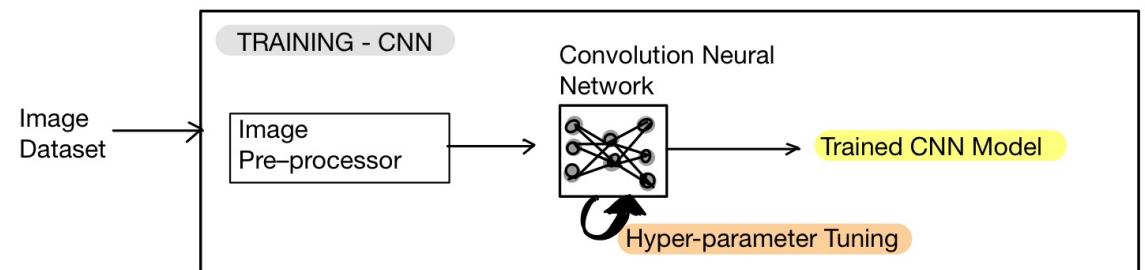
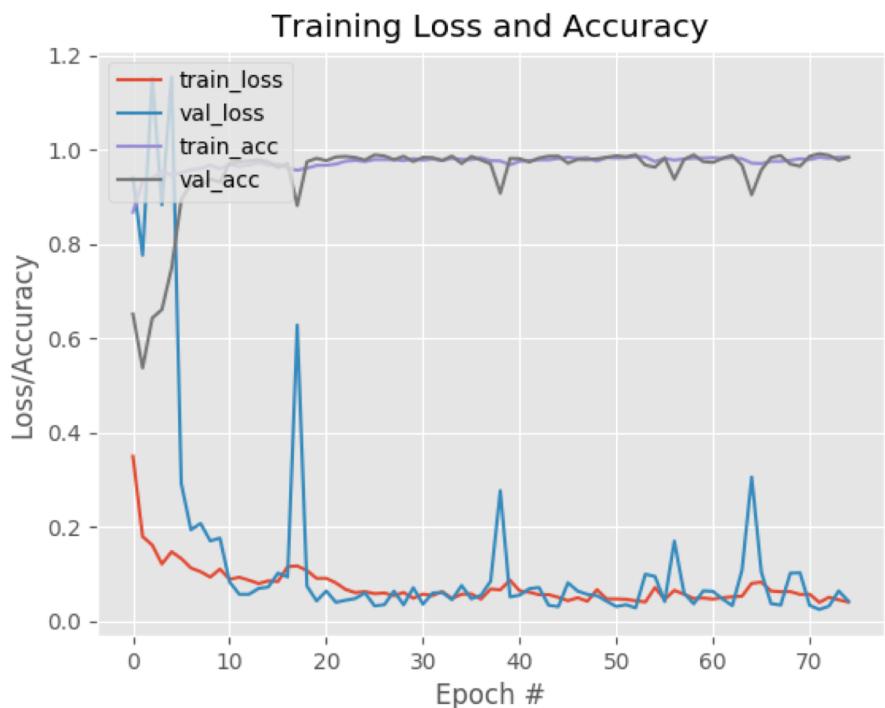
- Epoch : 100
- Learning rate : 0.001
- Optimizer : SGD (Stochastic Gradient Descent)
- Stride Value : 1
- Activation Function : Rectified Linear Unit “ReLU”
- Error/Loss Function : Cross Entropy
- Dropout (to avoid overfitting): 25%

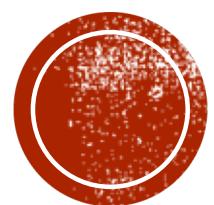
- **Evaluation Metric**

- Precision
- Recall

- **Training Results :**

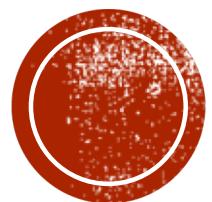
- Training Accuracy : 98.57%
- Testing Accuracy : 98.42%





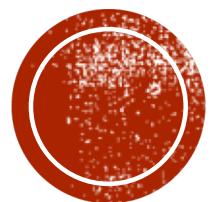
**DEMO**





# **KNOWN PRODUCT SCENARIO**

Selection of existing products

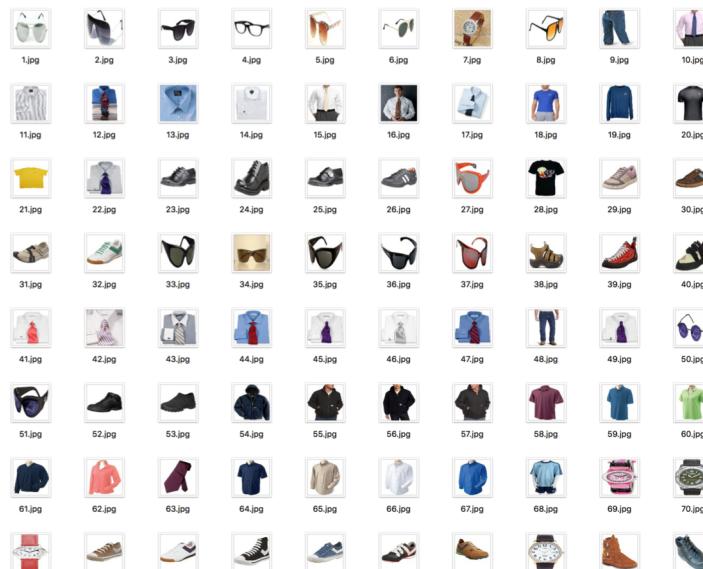


# UNKNOWN PRODUCT SCENARIO

Uploading a new product image

# DATA COLLECTION- TRAINING AND CLUSTERING

- GENERATION OF DATA – WEB SCRAPING USING PYTHON
- Selenium is used to send a request to the website from which the data is collected (images of the product). Python uses a Selenium driver to open the version of the web browser (chrome, Firefox, safari etc.)



# LANGUAGE USED

For **Convolutional Neural Network** development and training o Python 3 Libraries like:

- o Keras 1.2.2+
- o TensorFlow
- o R1.5
- o Pandas
- o NumPy

For **Recommendation System, Mapper-Logic** and **Biased-Clustering Network** development

- o Python 3
- o Java8

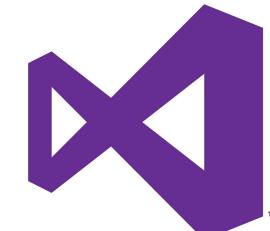
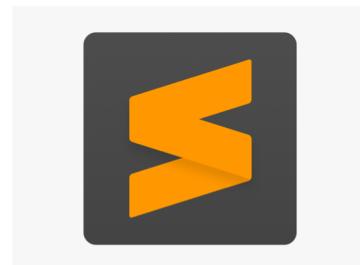
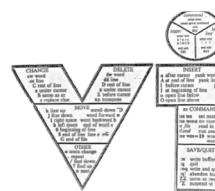
For **Web-Portal** development o HTML

- o Bootstrap
- o Angular JS



# TOOLS USED

- o IntelliJ
- o Visual Studio
- o Sublime Text
- o Vi-Editor
- o Selenium



# FUTURE SCOPE OR INVESTIGATION

- **Social + Interest Graph Based Approach:**

In this approach, products are recommended to users based on the interests of the user's social network connection.

People with same interests are connected in Social Media and hence might have same likings. Thus a product bought by the user's close circle will be recommended to the user, it is not bought by the user.

- We can try to train our model on a larger amount of data using batches. This can potentially increase the accuracy of the model.



**Thank You**

