Technological University (Thanlyin)
Department of Information Technology Engineering
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Fashion recommendation system

Second seminar

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Introduction

- Fashion Recommendation Systems (FRS) are AI-driven tools revolutionizing the way consumers discover and shop for clothing and accessories.
- Leveraging advanced algorithms and data analytics, FRS offer personalized recommendations tailored to individual preferences, demographics, and style preferences.
- On e-commerce platforms, where numerous choices are available, an efficient recommendation system is required to sort, order, and efficiently convey relevant product content or information to users.
- Incorporating Convolutional Neural Networks (CNN) and utilizing platforms like Google Colab can significantly enhance the development and deployment of these systems.

Abstract

- A recommendation system is a system that predicts future preferable items from a large set of collections.
- Building a fashion recommendation system is challenging due to the dynamic nature of the fashion industry.
- In recent years, the textile and fashion industries have witnessed an enormous amount of growth in fast fashion.
- Image-based fashion recommendation systems have attracted a huge amount of attention from fast fashion retailers as they provide a personalized shopping experience to consumers.
- With the technological advancements, this branch of artificial intelligence exhibits a tremendous amount of potential in image processing, parsing, classification, and segmentation.
- Convolutional Neural Networks (CNNs) play a crucial role in analyzing fashion images, while Google Colab provides a robust platform for developing and testing these models.

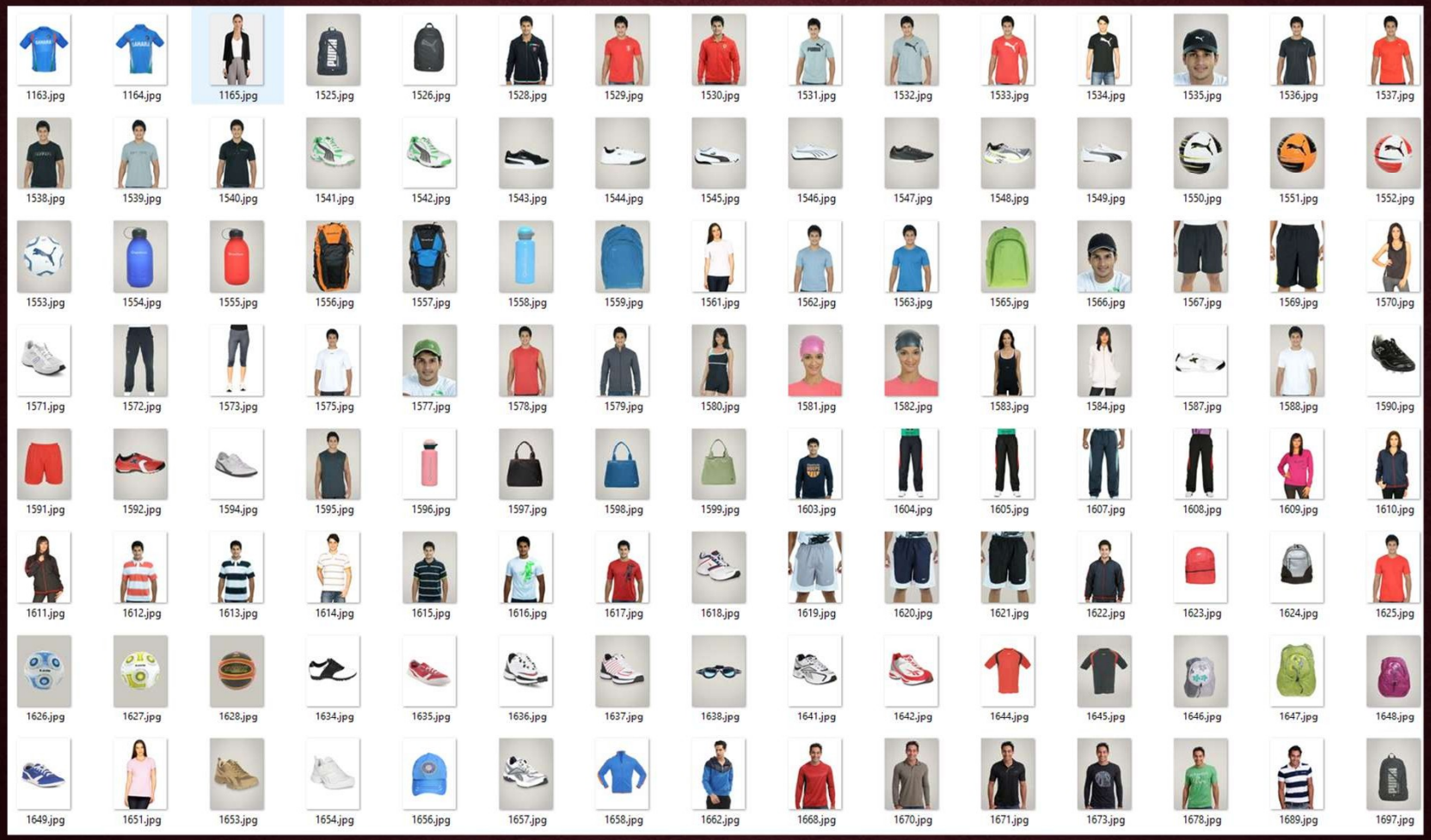
Aim

To develop a robust fashion recommendation system using Convolutional Neural Networks (CNN) that can accurately predict and recommend clothing items based on visual similarities.

Objectives

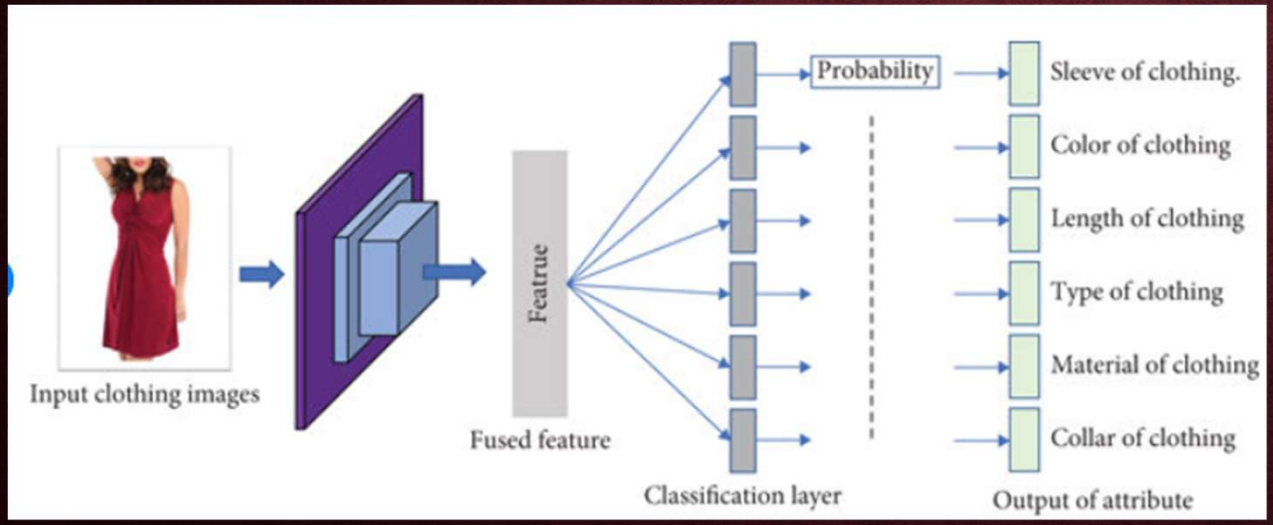
1.To leverage CNNs for efficient image processing and analysis of fashion items.
2.To utilize Google Colab for developing and testing the recommendation system.
3.To create a personalized shopping experience for users through accurate and relevant fashion recommendations.
4.To continuously improve the recommendation system by integrating feedback and new data

Image Sample Dataset



Convolutional Neural Network (CNN)

A CNN for fashion recommendation systems leverages deep learning techniques to analyze and understand images of clothing items, enabling personalized recommendations based on visual similarities and patterns. CNNs excel in identifying intricate details in images, making them ideal for fashion applications where visual appeal is paramount.



Advantages of CNNs:

Spatial Hierarchy of Features: Captures detailed visual hierarchies.

Parameter Sharing: Reduces the number of parameters for efficiency.

Translation Invariance: Detects features regardless of position in the image

Overview of how CNNs work

•**Input Layer:** Takes an image as input, represented as a matrix of pixel values.

•**Convolutional Layers:** Apply filters to the input image to create feature maps, capturing various features like edges and textures.

•**Activation Function (ReLU):** Introduces non-linearity by replacing negative pixel values with zero, helping to learn complex patterns.

•**Pooling Layers:** Reduce the spatial dimensions of feature maps, retaining essential information and reducing computation.

•**Fully Connected Layers:** Flatten the feature maps and connect every neuron in one layer to every neuron in the next, performing high-level reasoning.

•**Output Layer:** Produces the final prediction, such as classifying the type of clothing.

Google Colab

Google Colab is a free, cloud-based platform that provides powerful computational resources for machine learning and deep learning projects.
It supports Python and offers seamless integration with various libraries, including TensorFlow and PyTorch, making it an ideal environment for developing and testing CNN models for fashion recommendation systems.

Advantages of Google Colab:

- Free access to GPUs and TPUs
- Easy collaboration and sharing
- Pre-installed libraries and tools
- Access to Google Drive for data storage

Input image

Fashion Dataset

Transfer learning model (Densenet121, Resnet50,VGG16)

Embedding of input image

Embedding of all images from dataset

Cosine similarity

Top 5 images with highest similarity

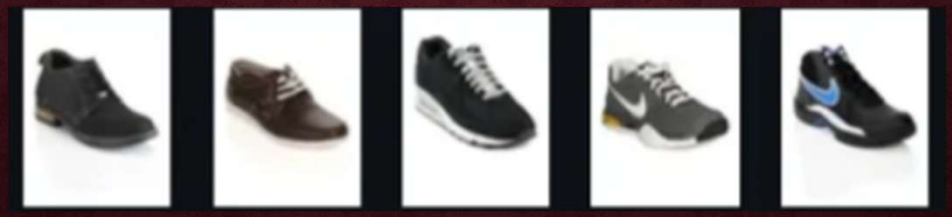




Sample Demo

The input image

The result



Conclusion

In conclusion, we have explored the dynamic landscape of fashion recommendation systems powered by Convolutional Neural Networks (CNN) implemented in Python. Fashion recommendation systems play a pivotal role in the ever-evolving fashion industry, aiding users in navigating through vast collections and personalized shopping experiences.

By leveraging CNN algorithms, we can effectively analyze and understand fashion images, providing tailored recommendations to users based on their preferences and style. Python offers a versatile and powerful platform for implementing CNN models, allowing for efficient development and deployment of fashion recommendation systems.

Platforms like Google Colab enhance this process by providing accessible and powerful computational resources, facilitating the rapid development and testing of machine learning models.

As we continue to witness advancements in technology and artificial intelligence, the potential for innovation in image processing, classification, and segmentation within the fashion domain is limitless. Let's harness the power of Python, CNN algorithms, and Google Colab to revolutionize the way users discover and engage with fashion in the digital age.


THANK
YOU