Try-On Outfit

I ABSTRACT

Users engage with the platform by uploading a full-length photo, and the system employs sophisticated algorithms to analyse body dimensions, clothing preferences and also take an outfit as an input and extract the features and finding similarity between them and give ratings regarding the outfit for the user. Every type of outfit is assembled here where user can get ratings. The projects also deal with classification of accessories.

II INTRODUCTION

In a world increasingly driven by digital experiences, our project seeks to revolutionize how users interact with fashion online, bringing a new dimension to the concept of trying on outfits from the comfort of one's digital space. It can also give justification to a new revolution of virtual try on which is the upcoming generation.
With the help of extracting features of two similar things gets easy with the help of machine learning and deep learning by training models which can be integrated on flutter app.
The world of fashion serves as an ideal canvas for the application of VR technology. Imagine trying on an outfit, virtually, with precision and realism, as if it were already on your body. Picture visualizing your look within the confines of your own living space, without the need for physical markers or prototypes. This project embodies the fusion of technology and creativity, addressing real-world challenges and filling an existing research gap.

III MOTIVATION

This project appears to be enhancing the online shopping experience, particularly in the realm of fashion. It revolves around leveraging advanced technology to create a more personalized, engaging, and confidence-building online fashion shopping experience, with a vision for the future of digital fashion exploration.

Several potential motivations:

1. As we can see in today’s online market people are in confusion that how that product will be looking on them and they take the product without any estimation which creates problem for them

2. It also creates problem for the online shopping-based companies that they will be under loss due to more chances of returning of product from their customer

3. Users will be able to get personalized recommendations on which outfit will be better for them and it will save their time searching for different products.

IV LITERATURE WORK

Transfer learning is a prominent paradigm in deep learning that addresses the challenges associated with training models from scratch by leveraging knowledge gained from a pretrained model on a related task. This approach has demonstrated significant success in various domains, including computer vision and natural language processing [1].

ResNet (Residual Network) Architecture has emerged as a pivotal advancement in deep neural networks. It was designed to address the challenges of training very deep neural networks, allows the network to learn residual functions, making it easier to train very deep networks. These blocks contain skip connections, also known as shortcut connections, which allow the network to learn residual functions. Introduced to tackle the degradation problem associated with training very deep networks, ResNet employs residual blocks and skip connections to facilitate the flow of information through the network. This architecture of ResNet (from Fig1) has proven instrumental in achieving unprecedented accuracy on image recognition tasks. It is having 50 convolutional neural networks [2].

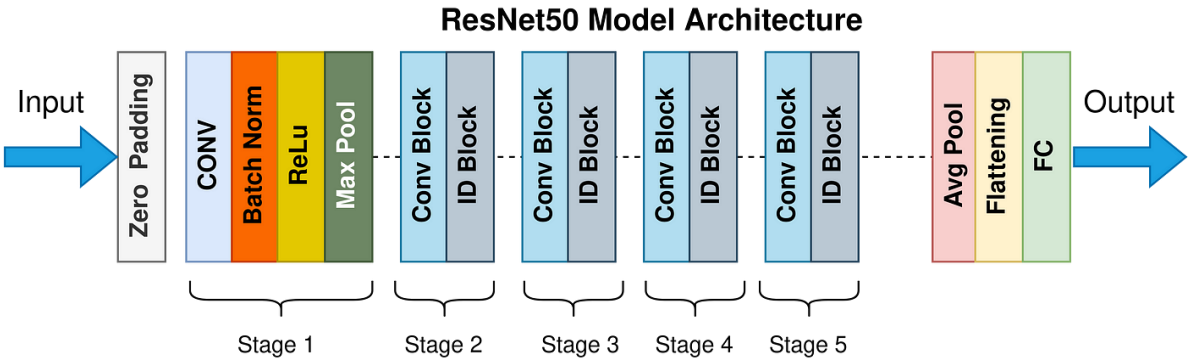

Fig1 – ResNet Architecture from tensorflow.keras.application

V PROBLEM DEFINITION

This report addresses the challenge of outfit classification and similarity ranking by proposing a system that analyses a person's image and a standalone outfit image. The objective is to classify the standalone outfit and determine its cosine similarity with the person's attire, consider using transfer learning with pre-trained ResNet models available in TensorFlow and PyTorch if you are working on image-related tasks. The proposed solution aims to enhance user decision-making in selecting outfits by providing a classification label for standalone attire and a cosine similarity score for personalized ranking. This approach combines image classification and similarity metrics to offer valuable insights into outfit compatibility [3][4].

VI PROPOSED FRAMEWORK

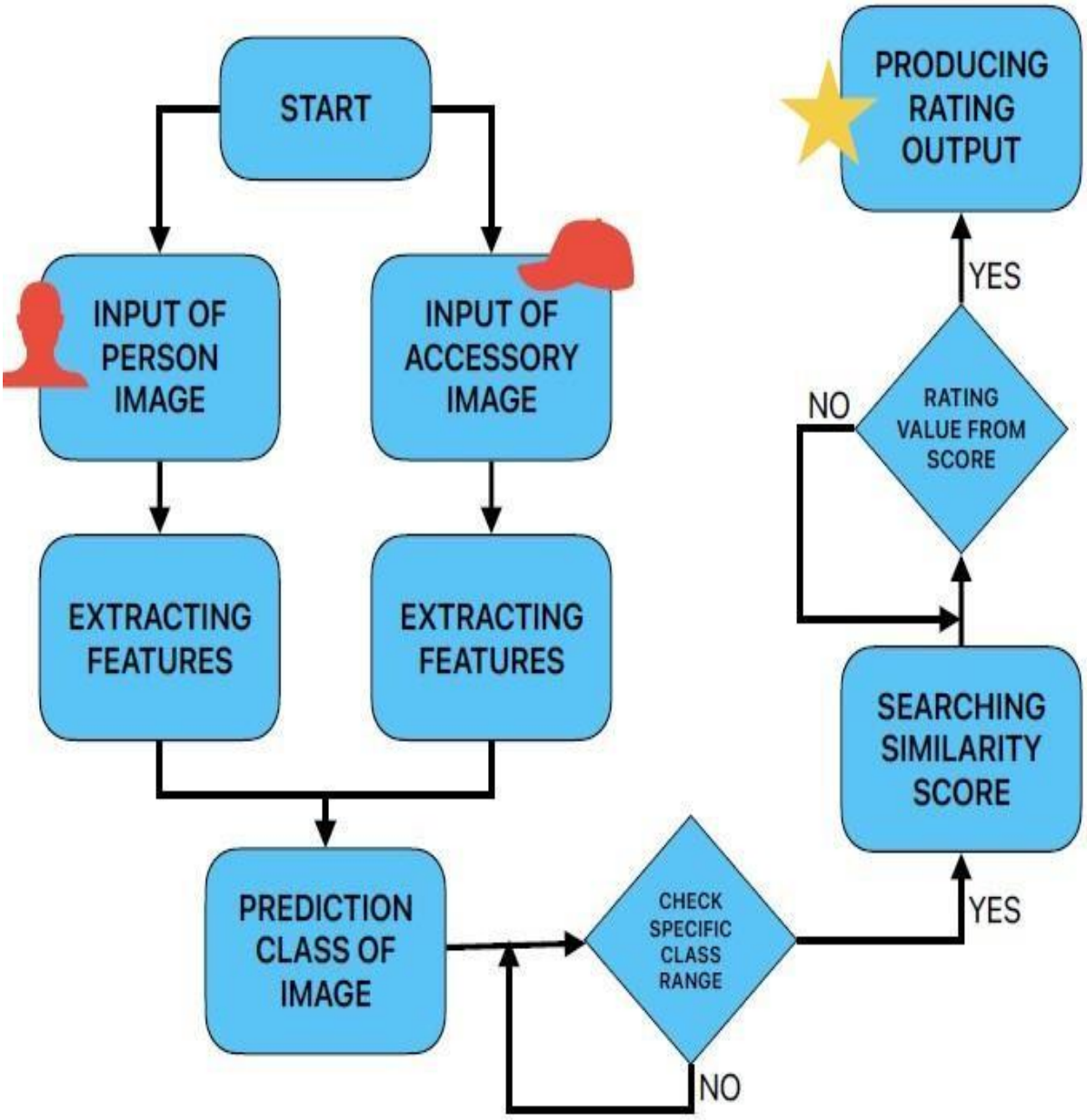

Fig2 – Flowchart of the project

Fig2 depicts about the working of project by taking input of images of user & the outfit and extracting features in form of ratings.

VII RESULT AND DISCUSSION

1. Classification:

The system classifies the input accessories image using retrained ResNet model architecture and using the concept of transfer learning.

We have seven labels on which classification takes place i.e.

[‘Caps’, ’Shirt’, ’Jeans’, ’Watch’, ’Shoe’, ’Jewellery’, ‘Eyewear’]

In the context of training neural networks, an epoch is one complete pass through the entire training dataset. During one epoch, the model processes every example in the training set once, updating the model's weights based on the computed errors or losses. In Fig3 and Fig4 Model and epochs are showing relation between them [5].

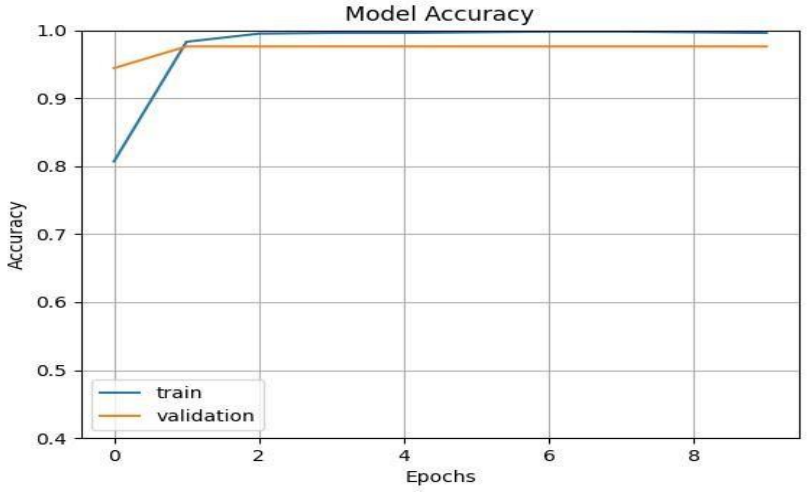

Fig3 – Graph depicts about model accuracy with increasing epochs

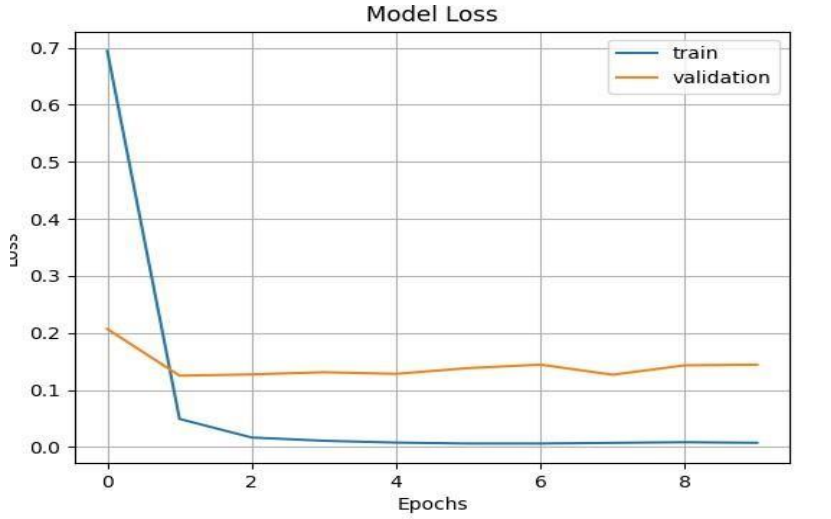

Fig4 – Graph depicts about model loss with increasing epochs

2. Ratings:

The rating is determined by extracting feature vectors from both images (Fig5), taking their dot product, and then normalizing the result to fit within a limited range of 5 and then it rates them according to the range of rank of the classified class of accessory image and the result is obtained as shown in Fig6.

Fig5 – Input image of user and the pink cap outfit

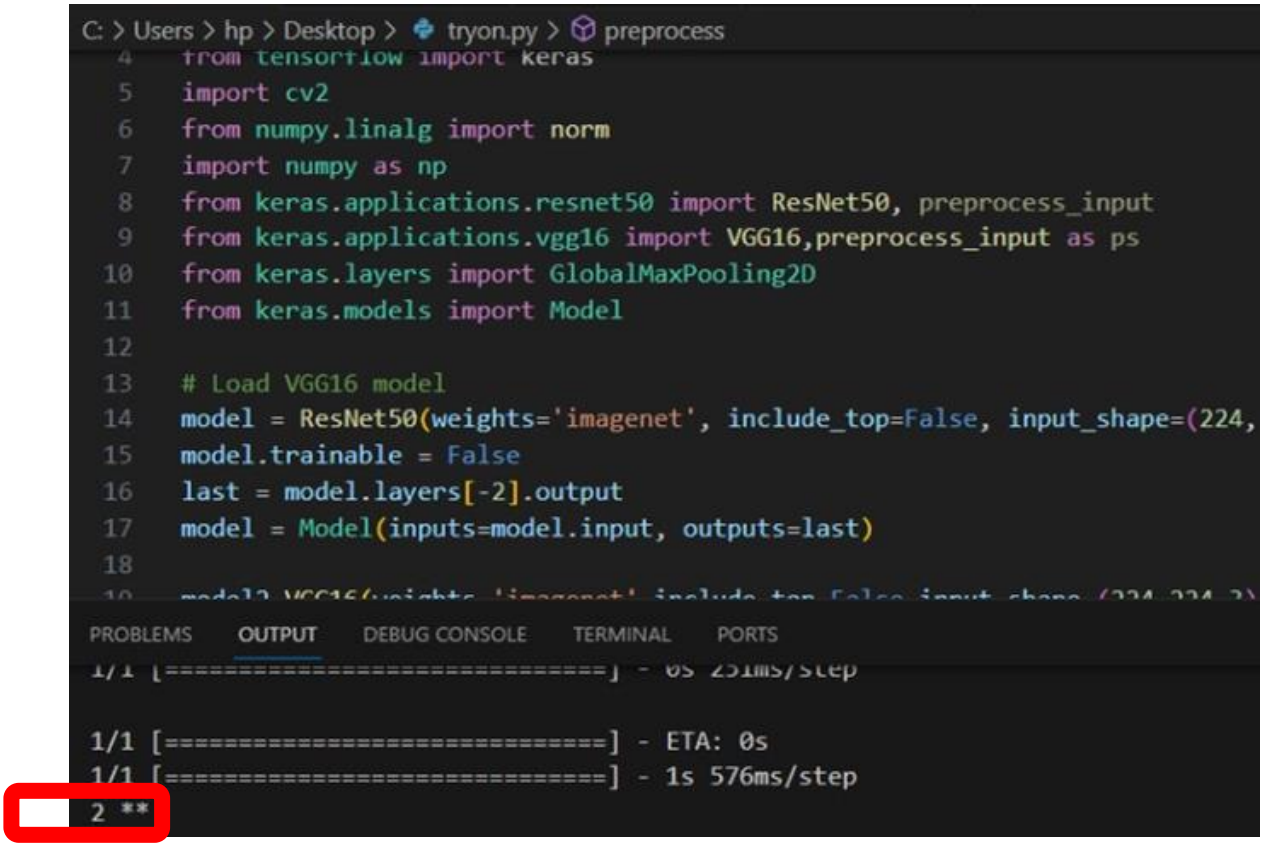

Fig6 – Result in compiler showing 2* rating of input data

VIII CONCLUSION AND FUTURE DIRECTIONS

In, conclusion the project is indicating the minimum and maximum similarity scores for each category based on the provided image [3]. Depending on the project's goals and context, it may want to add more details, insights, or future directions to the technology in commercial online shopping [4].
It demonstrated the precision of marker-based outfit try-on, ensuring similarity between the outfit and user and describe the ratings between them. Simultaneously, classification of objects has been done with the help of computer vision which may enhance the project in upcoming generation. Through ongoing refinement and expansion, it aims to provide users with an increasingly sophisticated and enjoyable buying an outfit experience which describes their choosing of the proper object.

Here are some potential areas for future development:

1. Expansion of fashion products:
It can consider adding a wider range of fashion products beyond outfits such as interior decorative items in house, proper project notebooks, etc.

2. Personalization and Recommendations:
By utilizing machine learning and AI algorithms it can offer personalized outfits recommendations or any product recommendations based on user preferences and style.

3. Cross-Platform Compatibility:
It can extend the app's compatibility to other platforms, such as iOS, to reach a broader user base and to ensure seamless cross-platform synchronization for user data and projects.

4. Augmented Reality Shopping:
By integrating e-commerce functionality (implementing secure payment options) directly into the app, it can enable users to make purchases of outfits within the AR environment.

By considering these future development opportunities, one can continue to innovate and enhance try-on application in both VR and AR.

IX REFERENCES

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