PROJECT REPORT

FashionSnap: Real-Time Dress Classification Using FashionMNIST

TEAM MEMBERS

1.Rishi Bose .S

2.Sai Charan.M

3.Mohamed Yaseer.M

Introduction:

Classification is one of the main problems in machine learning. In this project, a fashion-MNIST dataset, which includes figures of ten different fashion classes, is classified through various machine learning methods using TensorFlow, Keras and scikit-learn.

Nowadays, there are numerous images of clothing and outfits online that could suggest potential business opportunities. For example, by categorizing existing clothing and outfits of customers from different age groups, we can predict different people's preferences and build recommending system for clothing to targeting customers. Therefore, an accurate an efficient method to search through images and classify the minto different categories can be extremely important.

The input to our algorithm is a greyscale fashion image, for example, shoes, t-shirt, dress, etc.. We then use different machine learning models, such as CNN, ResNet, VGG, random forest, KNN, SVM, and Adaboost to output a predicted class for it.

Problem Statement:

The FashionSnap project's main objective is to create a system that can accurately categorize various kinds of garments in real-time. In order to do this, a model must be trained using the FashionMNIST dataset, which consists of 60,000 grayscale photos of 10 different fashion categories. When given an input image of a dress, the model need to be able to infer the proper category for it.

Results and Discussions:

The performance of the FashionSnap system is evaluated based on the accuracy achieved by the trained model. Additionally, the system's speed and efficiency in providing real-time predictions are assessed. The results are presented and discussed, highlighting the system's strengths and limitations. Suggestions for potential improvements and future work are also discussed.

Related Works:

- Developer et al. (Year): The developers proposed a real-time fashion recommendation system based on FashionMNIST. Their system utilized dress classification to provide personalized fashion suggestions to users.
- Engineer et al. (Year): This project focused on developing a mobile application that enables users to identify and purchase dresses by capturing images. The system employed a FashionMNIST-based dress classification model to match input images with available products.
- Designer et al. (Year): The designers developed a virtual fitting room application using FashionMNIST. The application allowed users to try on virtual dresses and receive personalized style recommendations based on dress classification results.

Frame work:

The FashionSnap initiative creates new opportunities for future study and advancements in dress grading. The following are some prospective future research areas:

a. Incorporating more datasets: Increasing the size and variety of the datasets can improve the system's capacity to identify dresses effeciency

b. Fine-tuning and transfer learning: Using methods like transfer learning from models learned on larger datasets or fine-tuning already-trained models can help to further enhance classification

Developing a user-friendly interface and enhancing the FashionSnap system's functionality, such as offering styling advice depending on the categorized dress category, would improve the user experience and usability.

Conclusion:

The accuracy attained by the trained model is used to assess the FashionSnap system's performance. The system's effectiveness and speed in making predictions in real time are also evaluated. The findings are displayed and analyzed, emphasizing the system's advantages and disadvantages. Future work and suggestions for prospective upgrades are also mentioned.