

PROGRESS REPORT

A Machine Learning and Visual Diagnosis System for Clothing Style Recognition

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The Adressed Problem

Clothing is a significant element that reflects individuals' personal expression and carries various meanings within society. However, the complexity and diversity of clothing styles make it challenging for retailers and online shopping platforms to provide suitable recommendations to customers. Today, companies aiming to keep up with the fast-paced changes in the fashion industry and better serve consumers are in search of a quick and effective system capable of accurately recognizing clothing styles. Performing this recognition manually is difficult, especially when trying to keep pace with rapidly changing trends on a vast dataset that includes hundreds or even thousands of clothing items.

The primary objective of this project is to develop a system that can automatically recognize clothing styles. This system can be utilized in various applications, such as offering users recommendations tailored to their clothing preferences, analyzing fashion trends, and optimizing inventory management in the retail sector. However, to achieve this goal, it is necessary to first develop an accurate, fast, and generalizable recognition system on a broad and diverse clothing dataset.

The main challenges that our project focuses on are as follows:

- **Diversity:** It is influenced by a variety of factors such as clothing styles, cultures, seasons, and special events. Therefore, the clothing style recognition system should be designed to encompass a wide range of diversity.
- **Speed:** Online shopping platforms and clothing brands require a fast recognition system to provide users with quick and instant suggestions. This project aims to enhance the capability to offer real-time solutions.
- **Generalizability:** The developed system should be effective in different geographic regions, cultures, and demographic groups. A generalizable model can better serve diverse user groups.

Related Work

The literature review was conducted with a focus on similar studies in the field of clothing style recognition. In previous research, various methods were commonly observed to be used for determining clothing styles. Particularly, some studies were found to provide visual suggestions using traditional classification methods such as Support Vector Machines (SVM) to identify clothing styles. However, it has been revealed that these methods often face difficulties in achieving sufficient speed and accuracy.

In studies using deep learning models like AlexNet, it was observed that the learning process of the model was slow, and the generalizability on large datasets was low. While studies employing deep learning techniques such as Convolutional Neural Networks (CNN) and Faster R-CNN exist, it has been noted that these methods are not entirely satisfactory in balancing speed and accuracy.

The literature review indicated that similar projects often focus on limited diversity datasets rather than extensive datasets containing various clothing styles. This suggests limited generalizability and low adaptability to real-world applications.

Upon examining similar projects, it was observed that in a project like clothing style recognition, Mask R-CNN yields faster and more accurate results compared to previous methods. This approach is designed to achieve higher precision and speed in determining clothing styles.

Employed Methodology

The project requires a lot of technical details and extensive research; therefore, the methodologies to be applied have been determined, but the practical implementation has not yet begun.

Experimental Evaluation and Any Preliminary Results

There is no experimental evaluation and preliminary results regarding the work as application studies have not yet begun.

References

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