IT608 Machine Learning

Automatic segmentation of clothing for the identification of fashion trends using k-means clustering

MSc-Data Science, DA-IICT, Gandhinagar, Gujarat

1. The Team:

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2. Problem Statement and Background:

Fashion is a fast-growing industry where patterns last up to eight months, being an incredibly competitive industry where trends are constantly evolving. When it comes to companies, forecasting is a significant factor; knowing the trends and making the correct forecasts in line with the ever-changing trends can make a big difference in a company's success. It is important to investigate the various strategies presented in order to achieve a more effective way of predicting the needs and requirements of consumers so that they better understand which strategies should be used for the best outcome. The main purpose of prediction is to better understand the pattern's impact on markets and consumer needs.

This project proposes a method for the automatic segmentation of clothing. The basic method of separation suggests a combination of machine learning and computer visualization algorithms. After separating the images, the fashion trends were identified based on: color, texture (complex material) and shape. Although these trends represent true clusters of fashion, further research should be completed by the supervised learning model. We're planning to use algorithms like canny edge detection, k-means clustering, probabilistic modeling and many more.

3. The Data Source We Intend to Use:

We use the fashion mnist as an image dataset, which includes a training set of 60,000 examples and a test set of 10,000 examples. Each example is a 28x28 gray image, associated with a label of 10 classes.

Here is our dataset link: `https://www.kaggle.com/zalando-research/fashionmnist`

4. Description of the Tools We Plan to Use:

We are planning to use the platforms such as Colab or Jupyter Notebook and libraries like: panda, NumPy, os, matplotlib, glob, zipfile, seaborn, OpenCV, Keras, sklearn.

5. Evaluation Strategy:

We are planning to develop an algorithm for automatically segmenting clothing from still images. Using the features that we extracted from the clothes and draw some initial conclusions about fashion trends.

Moreover, we're planning to apply a framework for continued research in support of our desired output: a model that can make fashion recommendations based on automatic segmentation and meaningful clustering of clothing features.