

Research Project Idea

**Project Title: “AI-Driven Fashion Recommendation System
Using Clothing Classification”**

Research Question:

How can deep learning models classify clothing styles and recommend personalized outfits for e-commerce applications?

Relevance to Society or Business:

- Enhances online shopping experiences by enabling personalized recommendations.
- Helps fashion retailers automate tagging and classification of apparel, improving search and filter functionality.
- Reduces return rates by offering better style matching and size suggestions.

- Supports virtual try-on applications, boosting engagement in digital fashion platforms.

Dataset:

<https://www.kaggle.com/datasets/andhikawb/fashion-mnistpng>

Citations:

- Liu et al. (2016) - "DeepFashion: Powering Robust Clothes Recognition and Retrieval with Rich Annotations"
https://www.cvfoundation.org/openaccess/content_cvpr_2016/papers/Liu_DeepFashion_Powering_Robust_CVPR_2016_paper.pdf
- Han et al. (2017) - "Learning Fashion Compatibility with Bidirectional LSTMs" <https://arxiv.org/abs/1707.05691>
- Guo et al. (2021) - "Deep Learning-Based Clothing Recommendation System for Online Shopping"
<https://arxiv.org/abs/2101.08301>

Key Differences

- **Objective:**
 - Liu et al. (2016) - Clothing recognition & retrieval using a large annotated dataset.
 - Han et al. (2017) - Learning outfit compatibility using Bi-LSTMs.

- Guo et al. (2021) - Personalized clothing recommendations for online shopping.
- **Methodology:**
 - Liu et al. (2016) - ntroduces DeepFashion dataset & FashionNet for attribute/landmark prediction.
 - Han et al. (2017) - Uses Bi-LSTM with visual & semantic embeddings for outfit compatibility.
 - Guo et al. (2021) - Applies deep learning to analyze user preferences for recommendations.
- **Datasets Used:**
 - Liu et al. (2016) - DeepFashion (800,000+ images).
 - Han et al. (2017) - Polyvore dataset (21,889 outfits).
 - Guo et al. (2021) - No specific dataset, focuses on personalized recommendations.