Cloth Detection and Segmentation

Project Idea

The aim of this project is to develop a computer vision system capable of detecting and segmenting various types of clothing items in images. The system will focus on two main tasks:

1. **Clothing Classification**: Identifying and categorizing of clothing types (e.g., shirts, pants, dresses).
2. **Clothing Segmentation**: Accurately separating clothing items from the image background for enhanced detection and identification in different environments.

Technique/Method

We plan to implement a deep learning-based approach, utilizing state-of-the-art models for both the classification and segmentation tasks.

Classification

For clothing classification, we will fine-tune a pre-trained convolutional neural network (CNN) model. This will enable efficient feature extraction and recognition of clothing categories in images.

Segmentation

For clothing segmentation, we will employ advanced segmentation models like **U-Net** [3] or **DeepLab** [4].

Dataset Explanation and Link

DeepFashion Dataset [1] and ModaNet Dataset [2]

Timeline and Individual Tasks

Week	Task	Responsible Member
Week 9	Data exploration, preprocessing, and augmentation	Apollinaria Chernikova
Week 10	Fine-tuning the classification model	Apollinaria Chernikova
Week 11	Training the segmentation model	Egor Machnev
Week 12-13	Testing, debugging, and performance evaluation	All members

References

[1] Liu *et al*. "DeepFashion: Powering robust clothes recognition and retrieval," 2016. Link

[2] Zheng *et al*. "ModaNet: A large-scale street fashion dataset with polygon annotations," 2018. Link

[3] Ronneberger *et al*. "U-Net: Convolutional Networks for Biomedical Image Segmentation," 2015. Link

[4] Chen *et al*. "Rethinking Atrous Convolution for Semantic Image Segmentation," 2017. Link