# CS3244 Project – Group 4

FashionMNIST Image Dataset

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A machine learning and deep learning project developed for CS3244, designed to classify FashionMNIST dataset using multiple models. Runs on both Google Colab and Local Conda environments.

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**Environment Setup**

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**Google Colab:**

- No installation needed. Just open chosen ipynb file and run the notebook in Google Colab.

**Local (Conda Environment):**

To replicate the environment locally, use:

**conda create --name <envname> --file requirements.txt**

If some packages are missing in your Python environment, you may encounter import errors. Install them manually or use the command above.

**Directory Structure**

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Your dataset should be placed in the following structure:

/src/

/data/

├── **fashion-mnist\_train.csv**

└── **fashion-mnist\_test.csv**

**How to Run the Code**

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**1. Prepare Dataset**

- Place your data in /data as above.

**2. (Optional) Exploratory Data Analysis and Feature Extraction**

**-** Run “Visualisation.ipynb” for general distribution and EDA

- Run the “feature\_extraction.ipynb” for visualizing HOG and SIFT feature extraction.

- Run “PCA.ipynb” for visualizing PCA of the dataset

**3. Model Training & Evaluation**

- Run ML or DL model file {xxx.ipynb} which includes all the steps including data preprocess to training and evaluation

**Additional Information**

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- Classical ML code is organized by model type. Within the model file, to test different dataset, simply comment/uncomment the code blocks you need.

- All results and evaluation of each model are already printed and output within the ipynb already; however, it can be run again to verify the given result.

- The codebase is modular and designed to allow quick testing and experimentation with different model and dataset combinations.