**Image Classification of the Fashion MNIST dataset**

**A machine learning project report**

**BSMALEA1KU**

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# **Introduction**

This section introduces the topic and provides background information.

* Introduce the dataset and what it contains, where it’s from, release time etc.
* How was it split up? Mention 10k train and 5k test data.
* Any observations on it? Perhaps a plot of distribution of classes.
* Was there any related work done already to study?
* Any assumptions we might have and initial insights.

Required: Exploratory data analysis. The report should introduce the reader to the data by illustrating selected aspects of the data.

Required: Visualisation of data. As part of the exploratory data analysis our report should present a visualisation of the dataset based on dimensionality reduction obtained from PCA. Remember to include some comments on what the reader can learn from our visualisation

# **Methodology**

This section describes the methods and techniques used in the project.

* Write about all 6 methods, DT (from scratch/library), FFNN (from scratch/library), RF, Template Matching

Required: Details on implementations. Your report should describe and discuss the key points of how you implemented the two methods, M1 and M2. Please also include a discussion of how you have asserted your implementation’s correctness.

Required: Details on machine learning methods. For each method, please make sure to include a description of how you applied the method to the data including details needed for an independent reproduction of your results and a discussion on how you have gone about selecting any hyperparameters for the method.

# **Results**

This section presents the results of the project.

Required: Interpretation and discussion of the results Your report should include a thorough discussion of the performance of each of the methods applied. In particular, you should compare the methods’ performance and guide the reader in interpreting the results. Use your expert knowledge to explain the results; for instance, why do particular methods perform better than others?

# **Discussions**

This section discusses the implications of the results.

# **Conclusion**

This section concludes the report and suggests future work.