Project 1: Manifold Learning for Fashion-MNIST Classification

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***Abstract*—**
***Index Terms*—Neural Network, Dimensionality Reduction, Manifold Learning, Multi-Layer Perceptron, Fashion MNIST**

I. Introduction

AUTONOMOUS image classification is a challenging problem which offers potential for significant advancement in the areas of biometrics, biology, medical diagnosis, security, and more **CITE**. This paper focuses on the use of dimensionality reduction/ manifold learning in conjunction with multi-layer perceptron artificial neural networks to automatically classify clothing items from the well-known Fashion MNIST dataset **CITE**.

A wide variety of approaches have been taken in attempt to solve detection and classification problems in imagery.

II. Methodology

A. Data Analysis

B. Dimensionality Reduction

Supervised:
Linear:
Nonlinear:
Global:
Local:

C. Network Architecture

D. Experiments

III. Results

IV. Discussion

In this sections, observations are made on results and insight is given to potential influences.

A. Results

B. Potential Improvements

V. Conclusions

A

Honor Statement

* I confirm that this assignment is my own work, it is not copied from any other person's work (published or unpublished), and has not been previously submitted for assessment either at University of Florida or elsewhere.