Project Topic:

Person Re-Identification

Course Name: CSE623 Machine Learning Theory and Practice
Professor Name: Prof Mehul Raval
University: Ahmedabad University

Team Name: Tech

Team Members:

1. **Shlok Shelat** - AU2240025
2. **Shrey Salvi** - AU2240033
3. **Rushi Moliya** - AU2240020
4. **Dhananjay Kanjariya** - AU2240023
5. **Purvansh Desai** - AU2240036

Extending Experiments to Real-World Data and Analysis Objectives:

- Extend our evaluation to the Market-1501 dataset to get a sense of the difficulties of applying traditional methods in the real world.
- Analyze the performance gap between the controlled conditions of the Kaggle dataset and the challenging real-world conditions of the Market-1501 dataset.

Work Completed:

Market-1501 Dataset Integration: We applied the same feature extraction and classification pipeline to the Market-1501 dataset, using an 80/20 training/evaluation split to keep all 1,501 identities in either training or evaluation datasets.

Experimental Results:

Identified very low test accuracies (0.0476 to 0.0953) on the Market-1501 dataset. We also noted very low precision, recall, and F1-scores and a very low Rank-1 accuracy, indicating the inability to generalize well, considering occlusions, variation in poses, and complexity in background.

Analysis of performance:

We reported that, despite performing well in a controlled setting, traditional feature extractors have very limited practical use due to their failure to obtain fine-grained feature detail robustness or to discriminate under real-world noise.

Discussion Development:

We outlined possible causes for the identifiable performance gap, including: overfitting on stable images; KNN failing to discriminate well in high dimensions; exclusion of the linear projection assumption in PCA.

Challenges:

Intra Class variation and significant appearance differences within Market-1501.

The limitation presented by the traditional feature extraction process is the inability to extract features from complexity of real world data.

Next Steps:

Consider opportunities to improve feature extraction (e.g., consider creating hybrid feature pairs or more spatial information). Draft the discussion and conclusions section of the final report with a focus on lessons learned and the next steps in research.