From: **CUI Yiran** tom.y.cui@connect.ust.hk
Subject: CSIC 5011: Project 1 Review
Date: 21 April 2023 at 4:10 PM
To: Yuan Yao datascience.hw@gmail.com

CY

Hi, Prof. Yao,

Hope all is good and going well.

I attached my review of the CSIC 5011 mini-project to this email. **Please note** that I am not a student with many backgrounds related to data reduction and visualization so I will **give high grades** to reports that I can learn from and **low grades** to reports that look fancy but I can only learn a little from. Thanks.

Review:

I.

Title: Image Inpainting with PCA (poster).
Summary: The author performed PCA on handwriting digits dataset to test the performance of PCA techniques and show the results that may not be stable when the training dataset contains damages (noises). Besides, the author gives advice on improvements of PCA in the end part.
The strengths: The poster clearly shows the results of analysis with details of technique processes.
The weaknesses: Lack of comparison with other methods.
Evaluation on clarity and quality of writing: 4
Evaluation on technical quality: 4
Overall rating: 4
Confidence on my assessment: 2

II.

Title: Human Migration History: A Single Nucleotide Polymorphisms Perspective (report).
Summary: The author performed PCA, K-means, MDS and t-SNE techniques on SNPs dataset with 4 different outputs. He concludes that two main components are not enough to describe the highly diverse human genetics. Besides, he compared the cluster results with PCA and shows that PCA is more suitable for the SNPs dataset.
The strengths: Different methods are performed and compared.
The weaknesses: K-means method is used without theoretical background description or proper citation and the number of pages exceeds the maximum requirement.
Evaluation on clarity and quality of writing: 4
Evaluation on technical quality: 4
Overall rating: 4

Overall rating: 4
Confidence on my assessment: 2

III.

Title: Ancestry Prediction via Dimensionality Reduction Techniques on SNPs Data (poster).
Summary: The authors performed PCA, MDS, t-SNE, ISOMAP, LLE, UMAP, robust PCA and random projection on SNPS dataset. The results of these results are shown and compared, and the conclusion that t-SNE has the best performance among these methods is drawn.
The strengths: Different methods are performed and compared clearly.
The weaknesses: Lack of theoretical/technical background of applied method so it is difficult for readers without much background.
Evaluation on clarity and quality of writing: 3
Evaluation on technical quality: 3
Overall rating: 3
Confidence on my assessment: 2

IV.

Title: Statistical Analysis on Authors and Word Trend of NIPS Papers from 1987 to 2017 (report).
Summary: The author analyzes NIPS papers to identify word usage trends and community detection within the research community by TopicRank, Louvain community detector and Leiden community detector and MDS methods. Clear results and workflows are shown.
The strengths: Clear results and citations are given.
The weaknesses: Lack of brief mathematical descriptions or theoretical introductions of applied methods.
Evaluation on clarity and quality of writing: 4
Evaluation on technical quality: 3
Overall rating: 4
Confidence on my assessment: 2

V.

Title: Robust PCA for Moving Object Detection in Video (poster).
Summary: The author used robust PCA to extract the foreground and background components of a video implemented by augmented Lagrange multiplier algorithms. Results show that the background components are more stable and clearer than the foreground part with a proper reason.
The strengths: Clear workflow, codes, theoretical backgrounds and analysis.
The weaknesses: Maybe better to show the time consumed by the algorithm implementing the augmented Lagrange multiplier and that of ADMM.
Evaluation on clarity and quality of writing: 5
Evaluation on technical quality:

Evaluation on technical quality: 5
Overall rating: 5
Confidence on my assessment: 2

Have a nice day!

Yiran (Tom) CUI
Postgraduate student
Department of Civil and Environmental Engineering
The Hong Kong University of Science and Technology
Clearwater Bay, Kowloon
Hong Kong

香港科技大學
THE HONG KONG
UNIVERSITY OF SCIENCE
AND TECHNOLOGY