

06. SUN, Jing, Shuang LUO, Zhijie YU. Dimensionality Reduction of Face Order Problem Using Nonlinear Embedding Methods.

Summary of the report.

In this project, they order the faces by using the four algorithms, i.e., Diffusion map, MDS-embedding, ISOMAP-embedding and LLE-embedding. It is found that all the four algorithms can effectively capture the Euclidean structure of the dataset. Besides, the ISOMAP is also capable of discovering the nonlinear degrees of freedom of the dataset.

Describe the strengths of the report.

Face pictures are present in the 2d embedding graph to help visualize.

Describe the weaknesses of the report.

'It is seen from Fig. 4 that the Isomap embedding can correctly detects the three degrees of freedom of the face images.' But in Fig 4, it's hard to find there are 3 degrees of freedom of the face images.

Evaluation on quality of writing (1-5):

4

Evaluation on presentation (1-5):

4

Evaluation on creativity (1-5):

3

Confidence on your assessment (1-3):

3

1. Dimensionality Reduction of Face Order Problem Using Nonlinear Embedding Methods

Summary:

Employment of different dimensionality reduction methods to arrange the face order.

Strength of the project:

Precise use of different dimensionality reduction methods to deal with the face order problem,

Weakness of the project:

It lacks the comparison of the performance of different methods, for example, how different are diffusion map, LLE and ISOMAP in performing the data embedding task?

Evaluation on Clarity and quality of writing (1-5):	4
Evaluation on Technical Quality (1-5):	3

Overall rating:	4
Confidence on your assessment:	2

Group 6

Summary of the report

Order face image with 4 models: Diffusion Map, MDS, ISOMAP and LLE.

Strength

Use four methods. Have good understanding of each method.

Weakness

Only exploration, no comparison, if with evaluation metrics, the conclusion may be more interesting.

Evaluation on quality of writing (1-5): 3

The 2D embedding figure do not match all points with one figure. The explanation on ISOMAP with 2D embedding is not convincing for 3 degree of freedom.

Evaluation on quality of presentation (1-5): 4

Very good presentation. But since the PubFig dataset is not used in this report, maybe replace it with some not misleading figures.

Evaluation on quality of creativity (1-5): 3

Only explore the 4 methods, maybe some further experiment could be tried.

Confidence on your assessment (1-3): 3

Comment on paper 6

In paper six, Dimensionality Reduction of Face Order Problem Using Non-linear Embedding Methods, the author used four methods including Diffusion map, MDS-embedding , ISOMAP-embedding and LLE-embedding to order faces and compared them.

The result is as an extension of the MDS method, the ISOMAP captures the geometric distances and can well describe the high dimensional problem, which is superior to the MDS methods which

only capture two intrinsic features. The LLE method uses the neighbouring data to reconstruct low dimensional embedding and such methods can offer information of global geometry. Diffusion map as another nonlinear method, maps the data to a diffusion space to preserve their diffusion distance. It can well distinguish different images with a relatively large time scale parameter. In this specific face order problem, it seems that the non-linear embedding algorithms can better describe intrinsic structures of the data.

Strength: The strength of this paper is the author compared four methods and the analysis is convinced.

Weakness: The weakness of this paper is there are some typos.

Evaluation on quality of writing: 4. The writing is clear. Pictures and charts are used in this paper.

Evaluation on presentation: 4. The paper is well organized and clear.

Evaluation on creativity: 3.

Confidence on your assessment: 3.

06. SUN, Jing, Shuang LUO, Zhijie YU. Dimensionality Reduction of Face Order Problem Using Nonlinear Embedding Methods

- **Summary:** This report tires to order 33 face images using Diffusion Map, MDS, ISOMAP and LLE. They find that all these four methods can effectively capture the Euclidean structure of the dataset.
- **Strength:** The report is compact and a good visualization is made.
- **Weakness:** It would be better to define an evaluation metric. What’s more, the author should give more detailed explanation of term like “Euclidean structure”, “intrinsic three dimensionality (that MDS fails to detect)”, etc.
- **Evaluation:**

	Writing	Presentation	Creativity	Confidence
Score	3	4	3	3

06. SUN, Jing, Shuang LUO, Zhijie YU. Dimensionality Reduction of Face Order Problem Using Nonlinear Embedding Methods.

Summary: The authors use Diffusion map, MDS, ISOMAP and LLE to order the face images. It is found that the nonlinear embedding algorithms can describe the structure of the data.

Strengths: Several manifold learning methods are used in the experiment.

Weakness: Some figures are too small. It would be better if the authors can compare the results of different methods.

Evaluation on quality of writing: 4

Evaluation on presentation: 4

Evaluation on creativity: 3

Confidence on your assessment: 2

06.SUN_LUO_YU_project2_poster

Summary:

In this project, Diffusion map, MDS-embedding, ISOMAP-embedding and LLE-embedding are used to order the faces. It is found that all the four algorithms can effectively recover the face order.

Strength and Weakness:

The strength of this paper is that it gives pretty vivid graphs to show the results of different methods and the poster is really fancy. However, it didn't show the instability of the MDS.

Evaluation on Clarity and quality of writing (1-5):	4
Evaluation on Technical Quality (1-5):	4
Overall rating:	4
Confidence on your assessment:	2

Dimensionality Reduction of Face Order Problem Using Nonlinear Embedding Method

5.1 Summary

LUO Shuang et al 's work focus on Nonlinear embedding method to perform dimensionality reduction on ordering face. The result shows the capability of these methods on the face ordering problem.

5.2 Strength and Weakness

Compare to group1, their strength is the data visualization which shows the different face image on the scatter plot. The weakness is that they can try more method other than these two.

5.3 Score

5.3.1 Clarity and Quality of Writing

The arrangement and structure of the poster is great, I believe they have spent a lot of effort on this report. I didn't find any typo. I will give them 5/5 on this aspect.

5.3.2 Presentation

Clear presentation. 5/5

5.3.3 Creativity

Doesn't see much creativity in this work. 2/5

5.3.4 Overall

4/5

06. SUN, Jing, Shuang LUO, Zhijie YU. Dimensionality Reduction of Face Order Problem Using Nonlinear Embedding Methods.

In this work, author ordered the faces by using the four methods, i.e., Diffusion map, MDS, ISOMAP and LLE. Authors claimed that the four methods could effectively capture the Euclidean structure of the dataset which is controversial.

Strengths: This work has a very good presentation where all members are involved, and the way authors showing their results aside the method introduction is worth learning.

Weakness: Evaluations are comprehensive enough comparing the group 03, where only visualization of ordering and embedding are conducted, no quantitative results on ordering performance evaluation.

Evaluation on quality of writing (3): The poster is not well organized, and there exist a lot of typos, for example, the most common typo algorithms which should be algorithms.

Evaluation on presentation (5): Good presentation which clearly conveyed their idea and explain the experiment design and their conclusion. All group members presented their assigned method.

Evaluation on creativity (3): The discussion only remains in ordering visualization.

Confidence on your assessment(2)