02. LIANG, Zhicong. Finding Trend in Stock Market with RobustPCA.
*Summary of the report.*
In this report, they explore how to capture the main trends within different classes of stocks with RobustPCA. They find out that RobustPCA can successfully separate the main trend from the noise and achieve the highest accuracy regarding classification, while PCA struggles with the noise and underperforms.
*Describe the strengths of the report.*
Analysis of the results are reasonable and easy to understand.
*Describe the weaknesses of the report.*
Table 2 is missing.
*Evaluation on quality of writing (1-5):*
4
'From Figure 2, we find that the low-rank components (the middle figure) of 10 stocks from IT have similar pattern (enclosed by black boxes) that is hard to notice in raw data.' Should be 'From Figure 3…'
*Evaluation on presentation (1-5):*
1
Presentation video not found.
*Evaluation on creativity (1-5):*
4
*Confidence on your assessment (1-3)*:
2

1. Finding Trend in Stock Market with Robust PCA
   Summary:
   Exploring the ability of Robust PCA in capturing the main trends within different class of stocks.

   Strength of the project:
   It is a nice idea to convert the problem into a classification problem in order to compare the performance of PCA and Robust PCA. Besides, it is nice to try to attribute the classification error of the industrial stocks. The reason provided here is reasonable.

   Weakness of the project:
   More information regarding figure 2 and 3 should be provided for readers' better understanding in the two figures.

| | |
|---|---|
| Evaluation on Clarity and quality of writing (1-5): | 4 |
| Evaluation on Technical Quality (1-5): | 3.5 |
| Overall rating: | 3.5 |
| Confidence on your assessment: | 2 |

## 02. LIU, Di, Meilan WANG, Xu HAN. Order the Faces via Manifold Learning

- **Summary:** This report tries to order 33 faces images using MDS, ISOMAP, LLE, LTSA, MLLE, HLLE, Diffusion Map, and t-SNE. Under their evaluation metric, they find that LLE gives the best result. And they also analyze the hyper-parameter, the number of neighbors K.

- **Strength:** The report makes a comprehensive overview of the 8 methods mentioned above and define a quantitative comparison. And their also analyze the effect hyper-parameter. What's more, the introduction is concrete with real-life application.
- **Weakness:** It would be better if the evaluation metric (TAE) can be defined mathematically.
- **Evaluation:**

| | Writing | Presentation | Creativity | Confidence |
|---|---|---|---|---|
| Score | 5 | 5 | 3 | 3 |

02. LIANG, Zhicong. Finding Trend in Stock Market with RobustPCA.

**Summary:** The author uses PCA and Robust PCA to analyze the SNP500 dataset and finds that Robust PCA can successfully separate the main trend from the noise.

**Strengths:** The paper is clearly written and contain a good analysis of the results.

**Weakness:** Some figures need more explanation.

**Evaluation on quality of writing: 5**

**Evaluation on presentation: Cannot watch the video.**

**Evaluation on creativity: 4**

**Confidence on your assessment: 2**

**02.LIANG-Zhicong-poster**

Summary:
In the project, the author showed that RobustPCA can successfully separate the main trend from the noise and achieve the highest accuracy regarding classification, while PCA struggles with the noise and underperforms. It captured the main trends within different classes of stocks with RobustPCA.

Strength of the report:
The organization of the project is pretty clear. It has a good logic.
Weakness of the report:
The graph of the classification result is not vivid enough.

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

## 01. LIANG-Zhicong-poster

1. Summary
   The report applied PCA and Robust PCA to capture the main trend with different classes of stocks. It was found that Robust PCA can successfully separate the main trend from the noise and achieve the highest accuracy regarding classification, while PCA struggles with the noise and underperforms.
2. Describe the strengths of the report.
   The report gives detailed analysis of the trend of the stock market and compared the algorithms of PCA and Robust PCA.
3. Describe the weaknesses of the report.
   More conclusions related to the data trend are lacking.
4. Evaluation on quality of writing (1-5): 4
5. Evaluation on presentation (1-5): 4
6. Evaluation on creativity (1-5): 3
7. Confidence on your assessment: 2

Comment on Paper 2

In paper two, Finding Trend in Stock Market with Robust PCA, the author used Robust PCA and PCA method to analyze SNP500 and try to find trend in stock market. In this report, they explore how to capture the main trends within different classes of stocks with Robust PCA. To better evaluate the performance, they convert their problem into a classification task using SNP500 dataset. Specifically, given a stock, they try to recognize its underlying class (10 classes in total, e.g. Industries, Information Technology, etc.), based on the assumption that stocks in the same class will have similar trend. That is, higher accuracy can be achieved if one could better characterize the trends of stocks.

Through the experiment, they find that Robust PCA can successfully separate the main trend from the noise and achieve the highest accuracy regarding classification, while PCA struggles with the noise and underperforms.

Strength: The strength of this paper is that the author uses Robust PCA and PCA method to analyze the SNP500 widely. Their dataset is big and the analysis is reasonable.

Weakness: The weakness of this paper is the PCA gets a worse result and author thinks it's caused by the noise of stock market. And the solution to improve it is not given.

Evaluation on quality of writing: 4. The writing is clear and author uses many pictures.

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

Evaluation on creativity: 3.

Confidence on your assessment: 3.

***Group 2***

*Summary of the report*

Using Robust PCA to find the trend in stock market.

*Strength*

Has good understanding of the market and analyzed reasonably.

*Weakness*

Only PCA and Robust PCA tried, other than Robust PCA, maybe other methods could also be explored, like Sparse PCA, Robust PCA by GAN.

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

Maybe change 'we' to 'I' since it's one person's work; replace 'report' with 'poster' maybe, since it's a poster; "These 452 stocks lie in 10 classes": 'sectors' maybe more accurate than 'classes' in the stock market.

*Evaluation on quality of presentation (1-5):* *1*
link not available, no presentation could be found.

*Evaluation on quality of creativity (1-5):* *3*
Seems an extension of project 1.

*Confidence on your assessment (1-3):* *3*

## 2. Finding Trend in Stock Market with RobustPCA

- **Summary of this poster:** This poster captures the main trends within different classes of stocks using RobustPCA and PCA. The results show that RobustPCA can successfully separate the main trend from the noise and achieve the highest accuracy regarding classification, while PCA struggles with the noise.
- **Describe the strengths of the report:** The poster uses two models (PCA and RobustPCA) to analyze main trends of stocks. The conclusion in this report is interesting.
- **Describe the weaknesses of the report:** In this poster, the authors showed the figure 3 which is the decomposition of 10 stocks in IT by RPCA but I couldn't find the corresponding analysis of Figure 3 .
- **Evaluation on presentation: 3**

Sorry I could open the link of their video (404 not found). I evaluated based on their slide. There are too many characters in the slide.

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

**Details of typos:** 1) Volatility is one of the main character (characters) of stock market that....

2) .... that stocks in the same class will have (a) similar trend

3) we find that the low-rank components of 10 stocks from IT have (a) similar patter...

4) This indicate(s) the trade-off between ...

5) ... are easily influenced by other stocks, resulting (in) a higher classification error

- **Evaluation on creativity (1-5): 4**

The PCA and RobustPCA are correctly used. However, it would be better if they provide more theoretical details of these two models.

- **Overal ratings: 3.5**
- **Confidence on your assessment: 3**

## 2 Finding Trend in Stock Market with RobustPCA

2.1 Summary

In this project, Liang Zhicong use robust PCA to recognize the trend of SNP500 dataset and compare the generative classification to the classification information without know it. The results show that RPCA has the ability to categorize the industry type and PCA doesn't.

2.2 Strength and Weakness

The strength of this project is the comparison is very interesting and all-rounded, I did not find specific weakness.

2.3 Score

2.3.1 Clarity and Quality of Writing

The writing is well-organized as Liang spend most of his effort on the analysis and do a brief introduction of the dataset, method and algorithm. I will give him 4/5

2.3.2 Presentation

Clear presentation and slides. 4/5

2.3.3 Creativity

The creativity is to apply RPCA on the stock price dataset and compare it with PCA over the financial data. I will give him 4/5.

2.3.4 Overall

4/5

02. LIANG, Zhicong. Finding Trend in Stock Market with RobustPCA.

The author explored the stock classification problem in SNP500 dataset, by using raw feature, PCA feature and Robust PCA features based on the

assumption that stocks within a class may have similar trends. The experiments demonstrated that Robust PCA has the better performance on noisy stock data.

Strengths: This work used three different method to extract stock trend feature representation and used which to classify the stocks into 10 classes. The figures are well illustrated to demonstrate the similarity of stock trends within the same class, and the evaluation is reasonable.

Weakness: There is no presentation video, which means this is not a complete work. Some key information might be missing in the poster, for example, in the third paragraph of Section Analysis, the mentioned Table 2 never appeared in the poster.

Evaluation on quality of writing (3): This poster is well organized, and figures are clear enough to demonstrate the author¡¯s idea, while as mentioned, author might lose some key evaluation results.

Evaluation on presentation (2): There is only slides with notes while no presentation video is available.

Evaluation on creativity (2): The methods and experiments are correct but normal which is not novel or creative.

Confidence on your assessment(2)