Peer Review

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1 02. ZHOU Qiqi. Image Inpainting with PCA

1.1 Summary of the report

The project presented the PCA method for inpainting images on the hand-written digits dataset. The author implied the method to three different damage patterns of broken images and it restored semantic information for moderate damage scenarios successfully but it is not always stable when dealing with highly damaged images.

1.2 Describe the strengths of the report

- The author used PCA to obtain the dictionary for inpainting images and selected a suitable value k for the important components.
- The method is feasible and effective.
- The author presented the result of all three patterns and discussed them properly.

1.3 Describe the weaknesses of the report

- What if we classify the number first and then inpaint them?
- An incomplete sentence in Section 3.

1.4 Evaluation on Clarity and quality of writing:

5

- Is the report clearly written?

  Yes, the writing of the poster is clear.
- Is there a good use of examples and figures?

  Yes, the figures explain the problem and result properly.
- Is it well organized?

  Yes, the poster is organized as Introduction, Problem and Method, Experiment, Results Analysis and Conclusion.
- Are there problems with style and grammar?

  No, I didn't find an obvious problem.
- Are there issues with typos, formatting, references, etc.?

  An incomplete sentence in Section 3.

1.5 Evaluation on Technical Quality

5

- Are the reproducible codes provided with the report?

  Yes.

- Are the results technically sound?

  Yes, the method successfully restored semantic information for moderate damage scenarios.

- Are there obvious flaws in the reasoning?

  No.

- Are claims well supported by theoretical analysis or experimental results?

  Yes, the result images show that the broken images are restored well.

- Are the experiments well thought out and convincing?

  Yes, the experiments split the dataset into a training dataset and a test dataset in a proper ratio.

- Will it be possible for other researchers to replicate these results?

  Yes.

- Is the evaluation appropriate?

  Yes, the evaluation compares the result and the original images properly.

- Did the authors clearly assess both the strengths and weaknesses of their approach?

  Yes, the author listed the scenarios in which the method's performance is good, and in some scenarios, the method gets an unstable result.

- Are relevant papers cited, discussed, and compared to the presented work?

  Yes.

1.6 Overall rating

5- My vote as the best report.

1.7 Confidence on your assessment

3- I have carefully read the paper and checked the results.

2 08. MA Ruochen; Jihong TANG; Yuyan RUAN; Zhi HUANG

2.1 Summary of the report

The authors utilized and compared several popular dimensionality reduction techniques. The project showed that random projection performs the best when separating people from 7 different regions. Further, it demonstrated that t-SNE could be used for ancestry prediction with considered performance.

2.2 Describe the strengths of the report

- The author used and compared many reduction methods, such as PCA, MDS, t-SNE, etc.
- The methods are feasible and effective.
- The author presented the result of different methods properly.

2.3 Describe the weaknesses of the report

- The authors need to define their research problem more clearly.
- The legend of the figures is hard to read.
- The authors may need to introduce the methodology and analyze the result more.

2.4 Evaluation on Clarity and quality of writing

4

- Is the report clearly written?
  Yes, the writing of the poster is clear.
- Is there a good use of examples and figures?
  Yes, the figures explain the result properly.
- Is it well organized?
  No, the poster lacks sections of methodology and analysis.
- Are there problems with style and grammar?
  No, I didn't find an obvious problem.
- Are there issues with typos, formatting, references, etc.?
  No, I didn't find an obvious issue.

2.5 Evaluation on Technical Quality

4

- Are the reproducible codes provided with the report?
  Yes.
- Are the results technically sound?
  Yes, the result indicates that random projection performs the best when separating people from 7 different regions, and t-SNE can be used for ancestry prediction with a good performance.
- Are there obvious flaws in the reasoning?
  No.
- Are claims well supported by theoretical analysis or experimental results?
  Yes, the result images show that SNPs are separated efficiently.
- Are the experiments well thought out and convincing?
  Yes, the comparison experiments are designed properly to get the result.
- Will it be possible for other researchers to replicate these results?
  Yes.
- Is the evaluation appropriate?
  Yes.
- Did the authors clearly assess both the strengths and weaknesses of their approach?
  Yes, the authors compared the different approaches for separating the SNPs.
- Are relevant papers cited, discussed, and compared to the presented work?
  Yes.

2.6 Overall rating

4- A good report.

2.7 Confidence on your assessment

3- I have carefully read the paper and checked the results.

3 09. HUANG, Zhanmiao; Wencan XIA; Yuanhui LUO

3.1 Summary of the report

The project conducted PCA, MDS and random projections on SNPs dataset to explore the genetic variation with geographic variations. The result indicates that both PCA and MDS are effective in separating people from different regions based on essential principal components of SNPs, which is more efficient than the random selection of SNPs. The authors also found that an adequate number of SNPs with top importance can tell the difference between genetic information from different regions and predict the region where people come from. Further, They study the populations of China and its neighboring areas and reveal that the similarity of SNPs principal components can reflect the relationship between their geographical locations.

3.2 Describe the strengths of the report

- The author used more than one method of reduction and compared their results properly.
- The methods are feasible and effective.
- The author presented the result of different methods properly.
- The case study is interesting.

3.3 Describe the weaknesses of the report

- The authors need to define their research problem more clearly.
- The aspect ratio of the poster seems not right.
- The legend of the figures is hard to read.

3.4 Evaluation on Clarity and quality of writing

5

- Is the report clearly written?

  Yes, the writing of the poster is clear.
- Is there a good use of examples and figures?

  Yes, the figures explain and result properly.
- Is it well organized?

  Yes, the poster is organized as Introduction, Dataset, Methodology, Results Analysis, Case Study, and Conclusion.
- Are there problems with style and grammar?

  No, I didn't find an obvious problem.
- Are there issues with typos, formatting, references, etc.?

  No, I didn't find an obvious issue.

3.5 Evaluation on Technical Quality

4

- Are the reproducible codes provided with the report?

  Yes.

- Are the results technically sound?

  Yes, the result indicates that both PCA and MDS can separate people from different regions based on essential principal components of SNPs.

- Are there obvious flaws in the reasoning?

  No.

- Are claims well supported by theoretical analysis or experimental results?

  Yes, the result images show that SNPs are separated efficiently.

- Are the experiments well thought out and convincing?

  Yes, the experiments and the case study are designed properly to get the result.

- Will it be possible for other researchers to replicate these results?

  Yes.

- Is the evaluation appropriate?

  Yes.

- Did the authors clearly assess both the strengths and weaknesses of their approach?

  Yes, the authors compared the different approaches for separating the SNPs.

- Are relevant papers cited, discussed, and compared to the presented work?

  Yes.

3.6 Overall rating

5- My vote as the best report.

3.7 Confidence on your assessment

3- I have carefully read the paper and checked the results.

4 15. MENG, Xiao; Ziyu ZHONG; Shunpeng YANG; Tianshu JIANG

4.1 Summary of the report

The project demonstrated the efficacy of four PCA variants in separating the low-rank background and sparse foreground matrices in surveillance video data. The authors found that the three other PCA methods outperformed ADMM in terms of accuracy. AccAltProj and SPCP-max-QN implemented in MATLAB with AccAltProj being faster than SPCP-max-QN. Meanwhile, ADMM and OMWRPCA both implemented in Python with OMWRPCA being faster than ADMM.

4.2 Describe the strengths of the report

- The author used four PCA variants and compared their results.
- The methods are feasible and effective.
- The author presented the difference between variants properly.

4.3 Describe the weaknesses of the report

- The authors need to provide the result of accuracy as they claim that three other PCA methods outperformed ADMM in terms of accuracy.
- The author used many spaces to show the method and fewer spaces to analyze the result.
- The poster is somehow lacking visualization of data.

4.4 Evaluation on Clarity and quality of writing

4

- Is the report clearly written?

  Yes, the writing of the poster is clear.
- Is there a good use of examples and figures?

  No, I cannot distinguish the difference between the result images of different methods well.
- Is it well organized?

  No, the poster lacks analysis.
- Are there problems with style and grammar?

  No, I didn't find an obvious problem.
- Are there issues with typos, formatting, references, etc.?

  No, I didn't find an obvious issue.

4.5 Evaluation on Technical Quality

4

- Are the reproducible codes provided with the report?

  Yes.
- Are the results technically sound?

  Yes, the method separates the foreground and background efficiently.
- Are there obvious flaws in the reasoning?

  No.
- Are claims well supported by theoretical analysis or experimental results?

  Yes.
- Are the experiments well thought out and convincing?

  Yes.
- Will it be possible for other researchers to replicate these results?

  Yes.
- Is the evaluation appropriate?

  Yes.
- Did the authors clearly assess both the strengths and weaknesses of their approach?

  Yes, the authors compared the different approaches for separating background and foreground in terms of accuracy and speed.
- Are relevant papers cited, discussed, and compared to the presented work?

  Yes.

4.6 Overall rating

4- My vote as the best report.

4.7 Confidence on your assessment

2- I just browse the paper without checking the details.

5 16. Chris HC Nguyen and James M Shihua

5.1 Summary of the report

The authors used the Robust PCA algorithm to extract the foreground and background components from a video. The results showed the algorithm converged efficiently within tens of iterations and reached the convergence criteria at the 35th iteration, which is significantly more performant than the ADMM algorithm (takes 1000 iterations). Further, the authors found that the background is very sharp and clean, while the foreground part has a certain level of noise.

5.2 Describe the strengths of the report

- Well formula the methodology.
- The authors provide the results, including coverage speed and the result images of foreground and background. It is interesting to see the difference between the foreground and background.
- The analysis is feasible and convincing.

5.3 Describe the weaknesses of the report

- In a limited space, it may be better to introduce the methodology rather than provide the code.
- The author didn't provide the metric for evaluating the performance, just discuss the coverage speed.
- The aspect ratio of the poster seems not right.

5.4 Evaluation on Clarity and quality of writing

5

- Is the report clearly written?

  Yes, the writing of the poster is clear.
- Is there a good use of examples and figures?

  yes, the figures to compare foreground and background is good.
- Is it well organized?

  Yes, it is well organized with Abstract, Introduction, Data, Methodology, Augmented Lagrange Multiplier, Results, and Conclusion.
- Are there problems with style and grammar?

  No, I didn't find an obvious problem.
- Are there issues with typos, formatting, references, etc.?

  No, I didn't find an obvious issue.

5.5 Evaluation on Technical Quality

5

- Are the reproducible codes provided with the report?

  Yes.

- Are the results technically sound?

  Yes, the method separates the foreground and background efficiently.

- Are there obvious flaws in the reasoning?

  No.

- Are claims well supported by theoretical analysis or experimental results?

  Yes.

- Are the experiments well thought out and convincing?

  Yes.

- Will it be possible for other researchers to replicate these results?

  Yes.

- Is the evaluation appropriate?

  Yes.

- Did the authors clearly assess both the strengths and weaknesses of their approach?

  Yes, the authors compared the result on separating the foreground and background and analyzed the reason for the noise of foreground.

- Are relevant papers cited, discussed, and compared to the presented work?

  Yes.

5.6 Overall rating

5- My vote as the best report.

5.7 Confidence on your assessment

2- I just browse the paper without checking the details.