

Accuracy Analysis of Principal Component Analysis Algorithm over Seam Craving Algorithm in Celestial Cloudscapes Through Picpluse Magic.

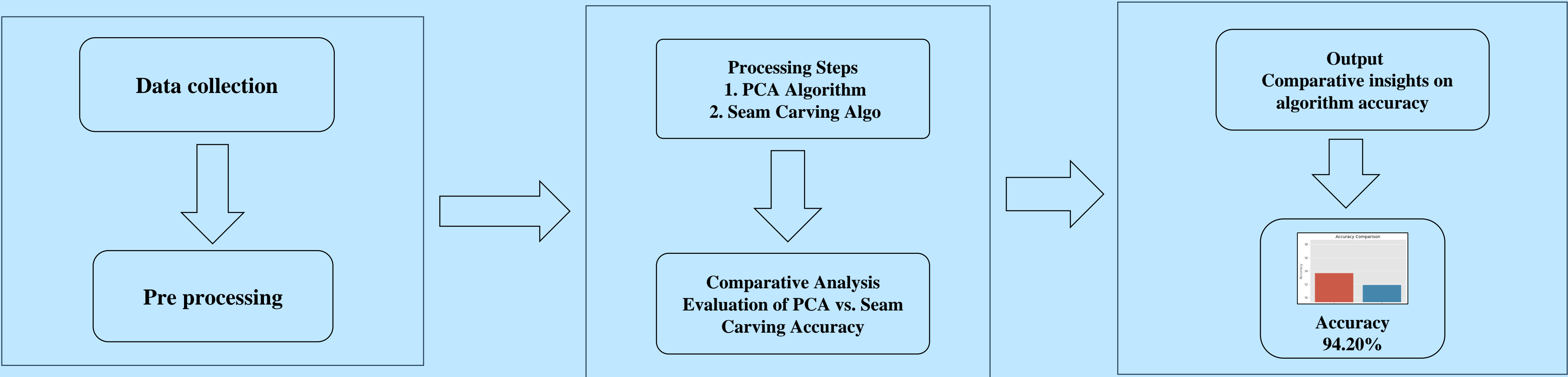
INTRODUCTION

- Evaluate the accuracy of Principal Component Analysis (PCA) against Seam Carving Algorithm in analyzing celestial cloudscapes through Picpluse Magic for enhanced understanding and interpretation.
- Assessing the accuracy of PCA and Seam Carving Algorithm aids in refining celestial cloud analysis methods, crucial for dimension reduction in clouds images.
- Findings contribute to advancing celestial cloud analysis techniques, benefiting meteorological agencies, environmental researchers, and astronomers for improved decision-making and space issues, thereby bridging critical research gaps.
- PCA focuses on dimensionality reduction and Seam carving removes non-essential content from the clouds data sets.
- Celestial cloudscapes obtained through Picpluse Magic serve as the dataset for comparative analysis, facilitating evaluation of PCA and Seam Carving Algorithm accuracy.



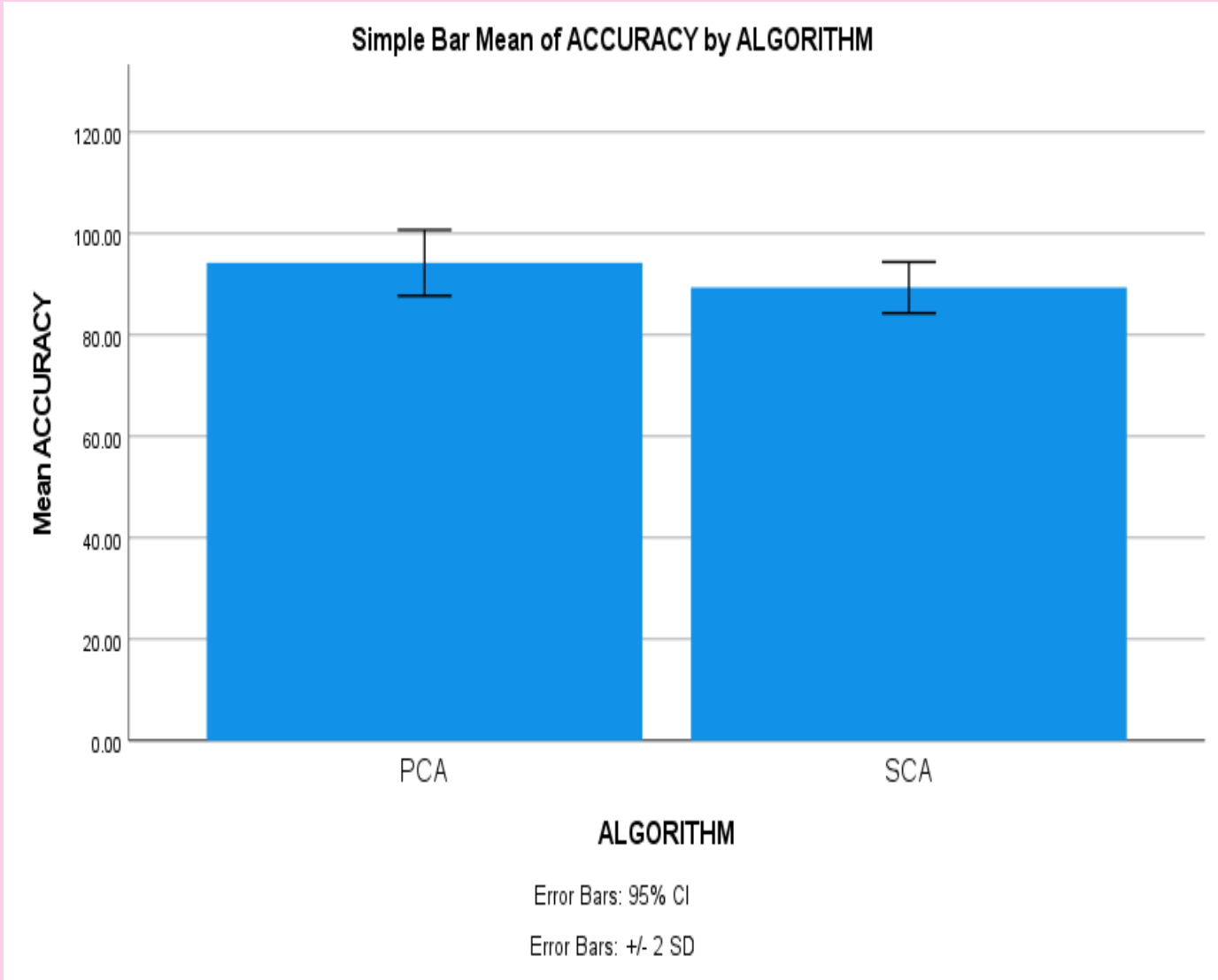
Indian Satellite view of clouds

MATERIALS AND METHODS

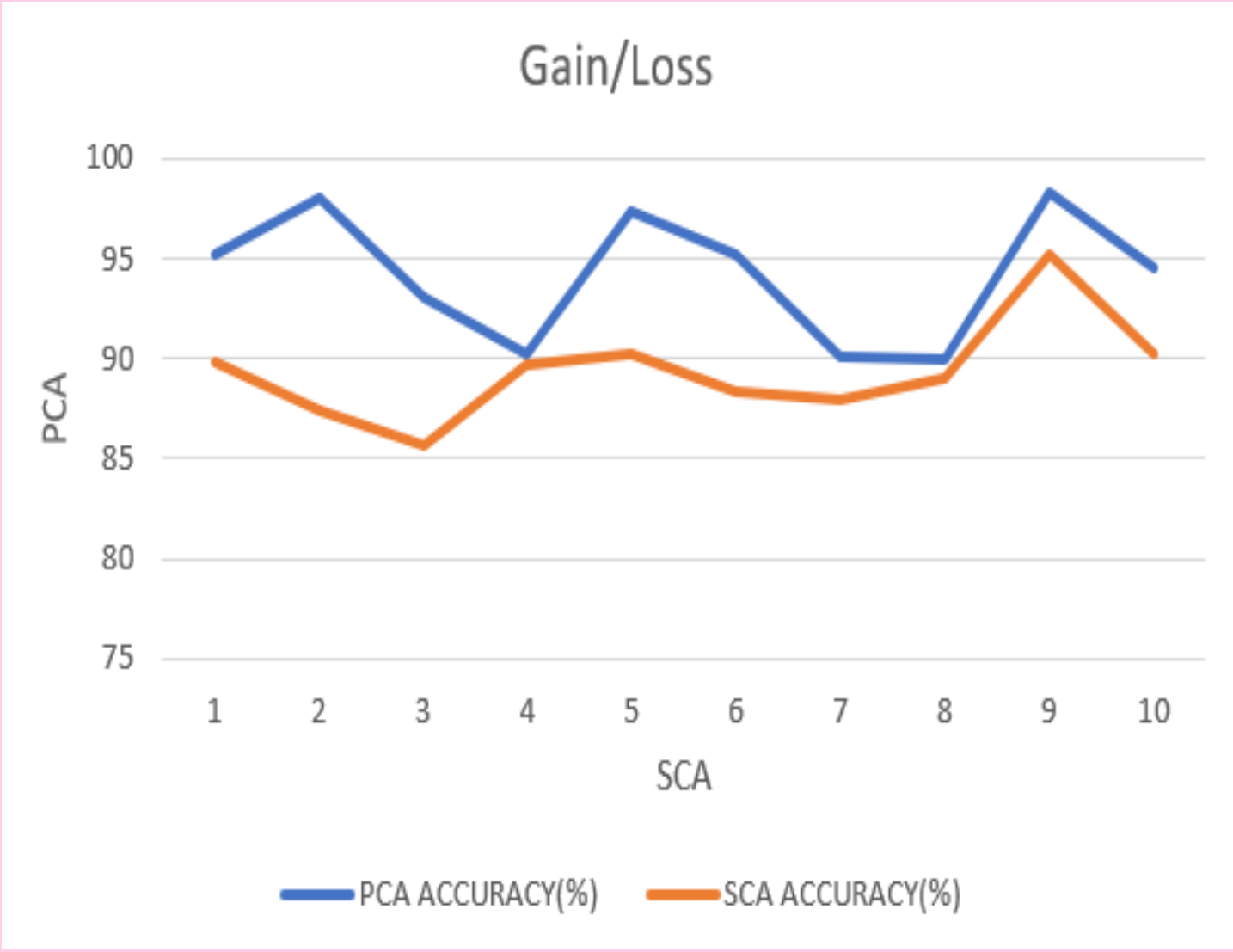


RESULTS

- This paper compares the Seam Carving Algorithm (SCA) with Principal Component Analysis (PCA). The results show that the PCA method is more accurate 94.20% Than the SCA algorithm, which yields 89.35%.
- The principal component analysis Algorithm and the Seam carving Algorithm have the values of the Mean accuracy, Standard Deviation, and Standard Error .



PCA and SCA



Gain/Loss of PCA and SCA

DISCUSSION AND CONCLUSION

- The findings of the investigation show that the Principal Component Analysis algorithm performed better than the Seam Carving Algorithm, with a high accuracy of 94.20%.
- The significance value $p=0.016$ ($p<0.05$) of the independent sample t-test indicates a significant difference in the algorithms among the 450 total sample.
- The Principal Component Analysis algorithm (PCA) outperforms the other approach by 94.20% in terms of accuracy.
- Through this exploration, it is deduced that Principal Component Analysis (PCA) algorithm has elevated precision comparing with Seam Carving algorithm for compelling examination on size decrease of images.
- Similar findings have been reported regarding Picpluse Magic's comparison of the Principal Component Analysis (PCA) algorithm and the Seam Carving algorithm in cosmic cloudscapes.

BIBLIOGRAPHY

- Russ, John C., and F. Brent Neal. 2018. The Image Processing Handbook. CRC Press.
- Masunaga, Hirohiko. 2022. Satellite Measurements of Clouds and Precipitation: Theoretical Basis. Springer Nature.
- Waggoner, Philip D. 2021. Modern Dimension Reduction. Cambridge University Press.
- Esmaili, Rebekah Bradley, Yudong Tian, Daniel Alejandro Vila, and Kyu-Myong Kim. 2016. “A Lagrangian Analysis of Cold Cloud Clusters and Their Life Cycles with Satellite Observations.” Journal of Geophysical Research, D: Atmospheres 121 (19): 11723–38.
- Antar, Samar, Hussein Karam Hussein Abd El-Sattar, Mohammad H. Abdel-Rahman, and Fayed F M Ghaleb. 2023. “COVID-19 Infection Segmentation Using Hybrid Deep Learning and Image Processing Techniques.” Scientific Reports 13 (1): 22737.*