

3D Human Skeleton Data Compression for Action Recognition



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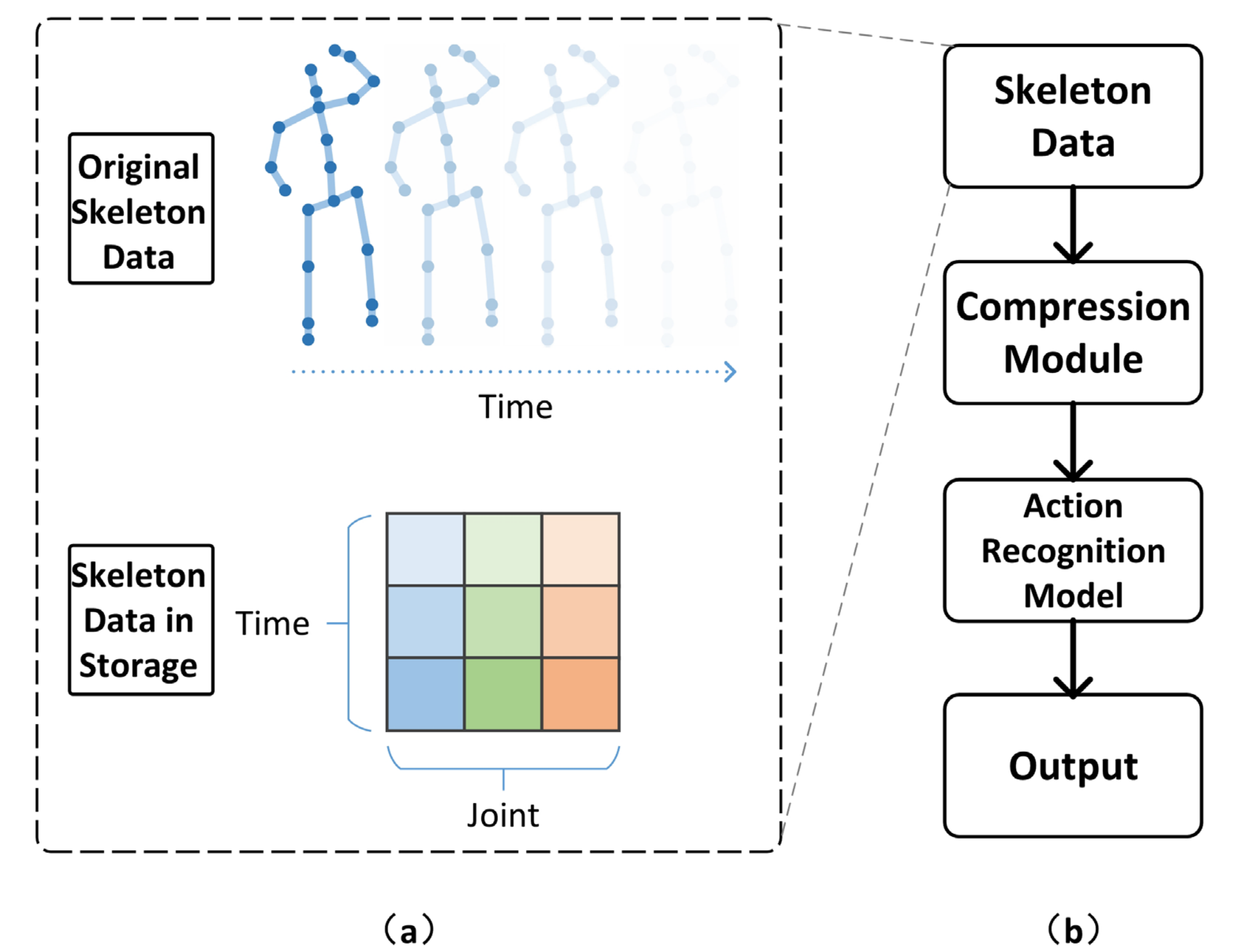
INTRODUCTION

Motivation:

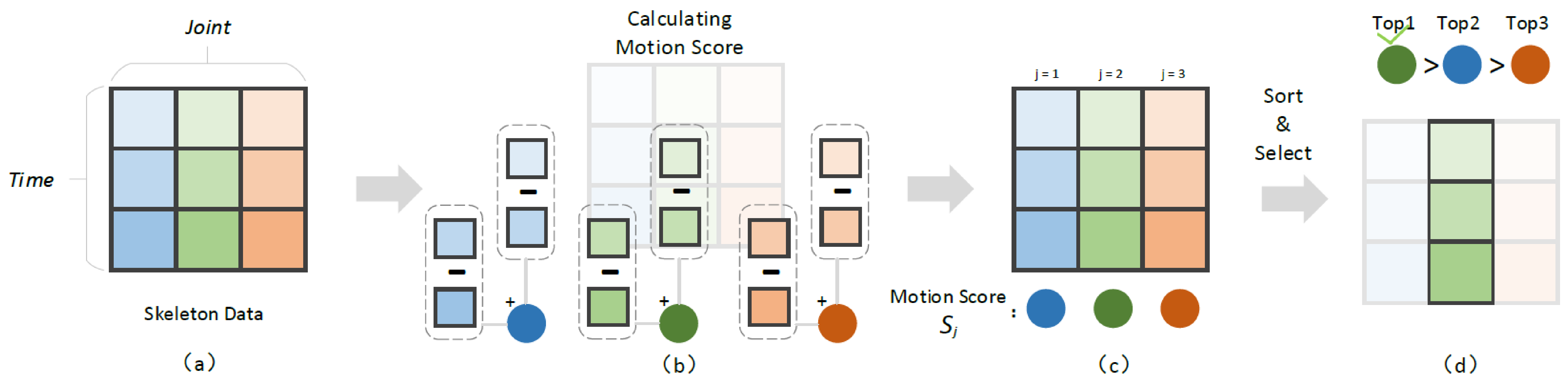
Skeleton-based action recognition continues to open up new application scenarios with the popularity of acquisition devices, which leads to a rapid increase in the amount of human skeleton data. However, there is currently no compression algorithm for such data.

Idea:

- 1) Our compression algorithm is designed for skeleton data, and it can compress the skeleton data stream to a small bandwidth while keeping the accuracy of action recognition as high as possible.
- 2) This method can be combined with existing compression algorithms.

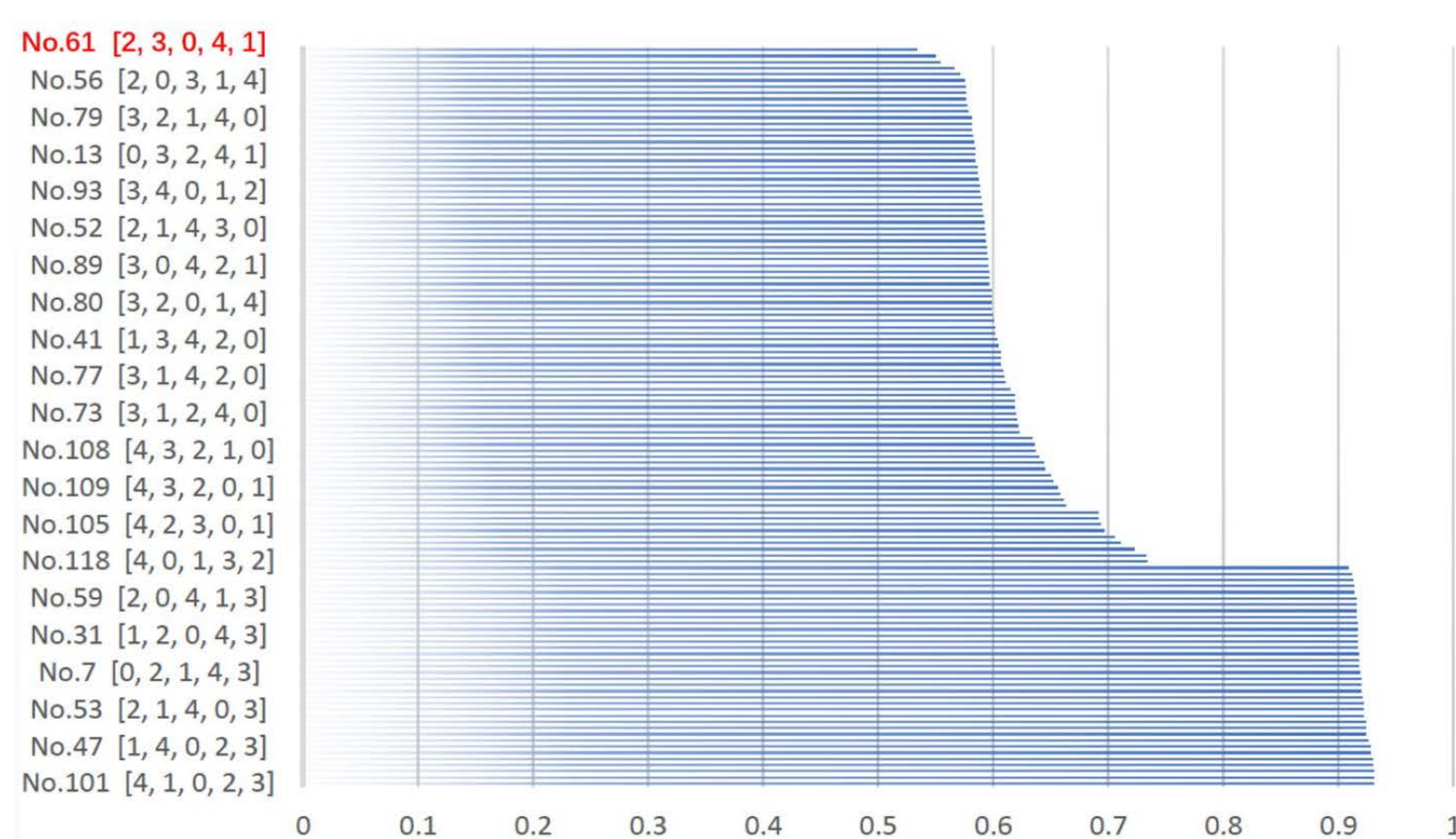


METHOD

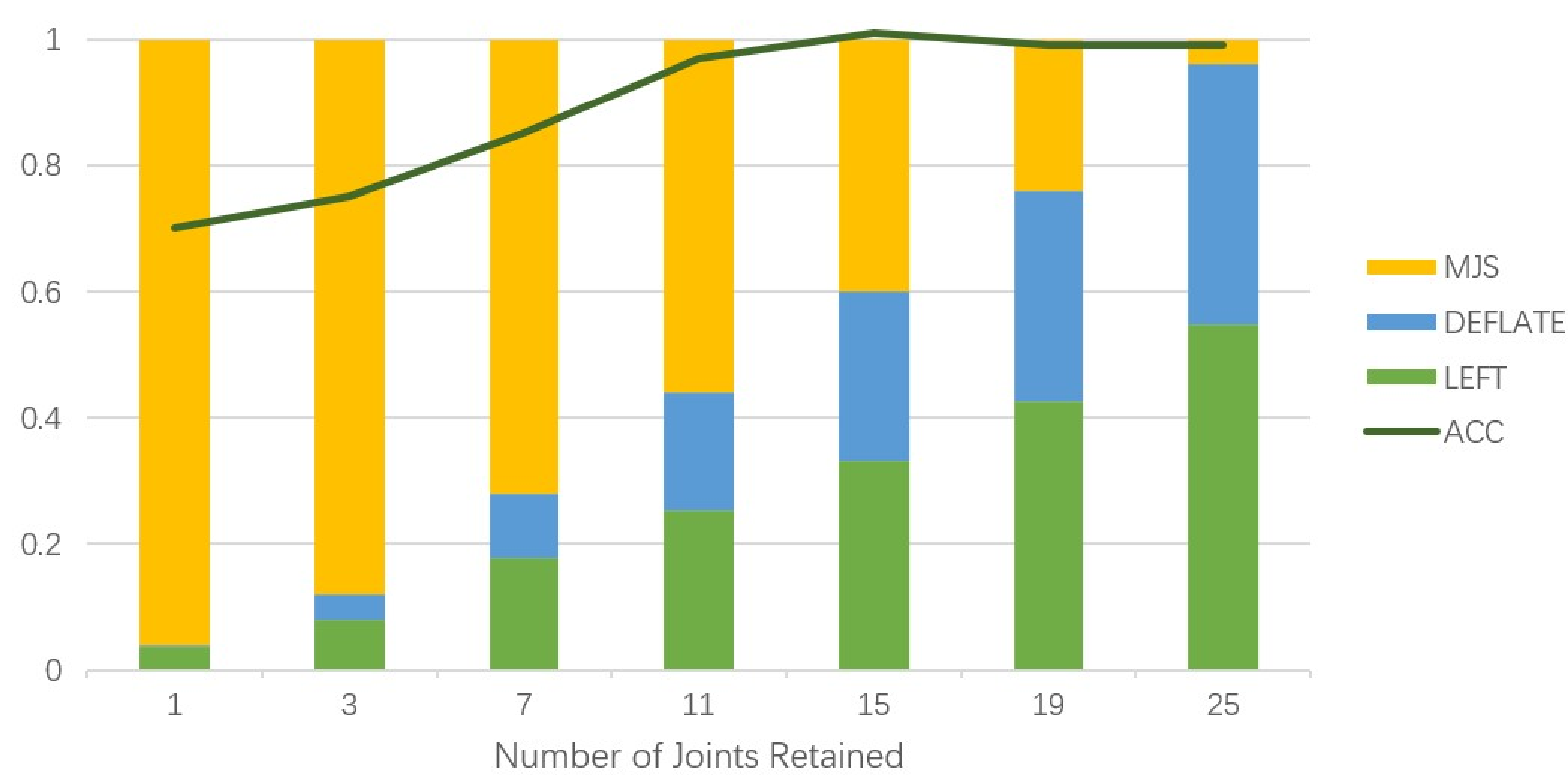


The key steps of the MJS algorithm. (a) is the original skeleton data. In the step (b), the motion flow of the skeleton data is calculated, and the motion intensity of each joint is calculated, that is, Motion Score. (c) is the Motion Score for each joint point. In the step (d), the top K joints are selected according to the score, and their joint ID numbers are recorded.

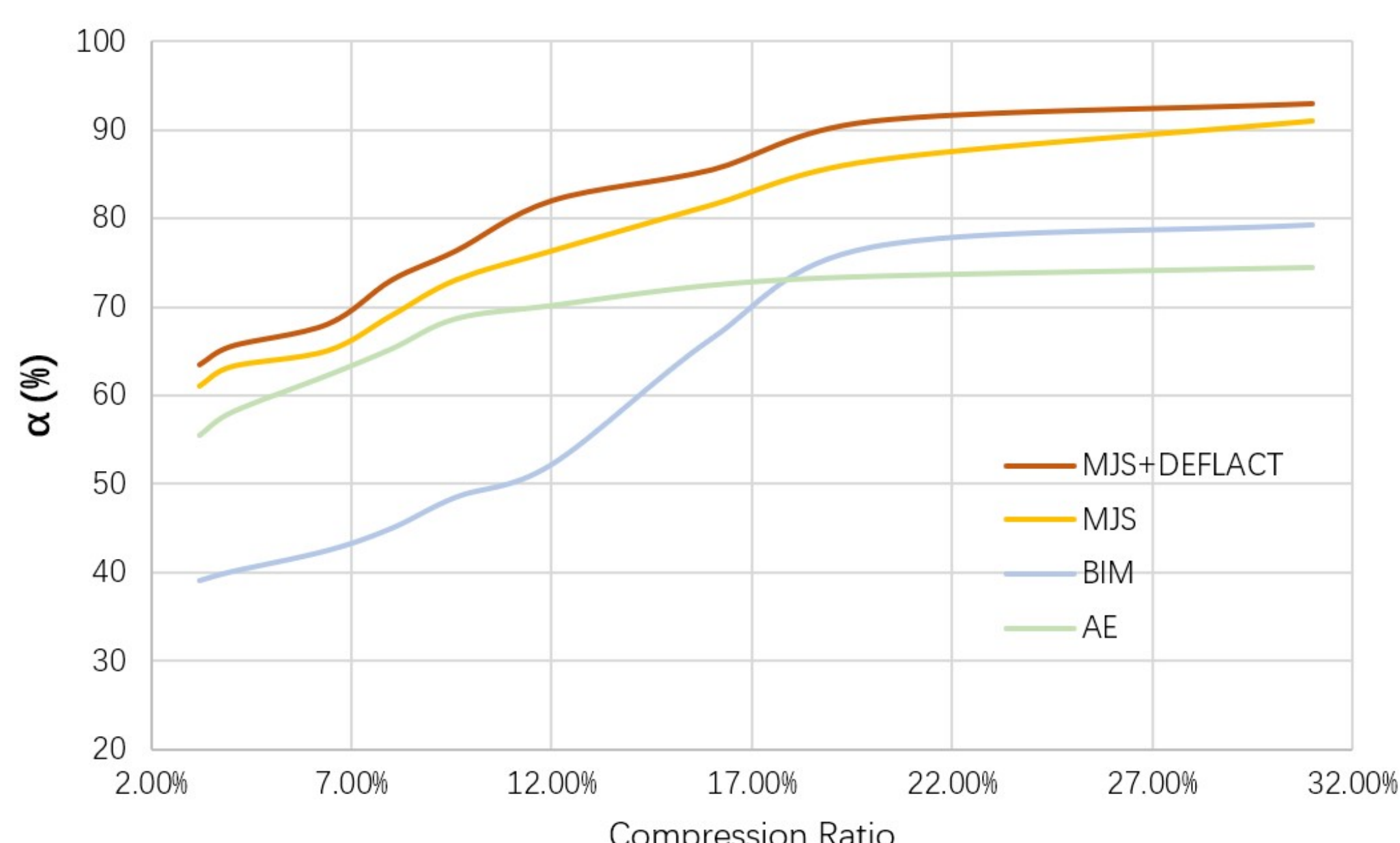
EXPERIMENT



Compression ratio in different serialization modes. 0, 1, 2, 3, and 4 represent the dimensions of N, C, T, J, and P, respectively



The yellow part is the amount of data that is reduced by the MJS algorithm, the blue part is the amount of data that is reduced by the DEFLATE algorithm.



Different methods under different compression ratios

CONCLUSION

We verified that our compression method MJS can achieve promising results on the benchmark NTU-RGB+D. Under the same compression ratio, The MJS algorithm has the excellent performance compared to other methods.