IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 7, May 2024

PPHOPCM Privacy-Preserving High-order Possibilistic C-Means Algorithm for Big Data Clustering with Cloud Computing

Vijaya Nanthini[1] and R. Mahalakshmi[2]
PG Student, Department of Computer Applications[1]
Associate Professor, Department of Computer Applications[2]
Vels Institute of Science Technology and Advanced Studies, Pallavarm, Chennai, India
vijayananthini92@gmail.com and rmahalakshmi.scs@velsuniv.ac.in

Abstract: *In image analysis and knowledge discovery, the possibilistic c-means technique (PCM), a crucial fuzzy clustering tool in data mining and pattern recognition, is widely used. Nevertheless, because PCM was first developed for small structured datasets, it might be difficult to get good clustering results for huge data, especially when the data is diverse. The research proposes a high-order PCM approach (HOPCM) for big data clustering, which resolves this problem by optimizing the objective function using tensor space. We also build a distributed HOPCM method for extraordinarily large amounts of heterogeneous data using MapReduce. Finally, we create a privacy-preserving HOPCM algorithm (PPHOPCM) to protect sensitive data on cloud servers by utilizing the BGV encryption method. PPHOPCM approximates the functions for updating the membership matrix and clustering canters as polynomial functions, facilitating the safe computation of the BGV method. Based on trial results, PPHOPCM may effectively cluster a large volume of heterogeneous data using cloud computing without revealing personal data.*

Keywords: possibilistic c-means technique.