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A NOVEL SMARTER DATA PROCESS METHOD FOR REMOTE SENSING BIG DATA

Abstract

With the quick development of recent remote sensing resolutions, there has been an increasing numbers of valued hyperspectral data from satellite sensors or airborne, which have rich information for a rather wide range of applications. More recently, the data is exponentially increasing every day, the human have been in the era of remote sensing big data. In the meantime, the continuous increasing remote sensing data not only brings the opportunities for the society but also gives birth to many challenges for the Earth observation platforms, such as it raises the demands of automatic data analysis and data storage space, which has been a bottle neck to limit the high speed of development of the remote sensing area. To address these problems, several statistical approaches about data dimensionality reducing have been proposed and proved to be efficient. In this paper, a novel statistical method is introduced to devote into less noise, lower dimensions, smarter and efficiency data transmission and less storage, which combines the advantages of Support Vector Machine (SVM) and Convolutional Neural Networks (CNN). SVM is response to extract the data features and CNN is as the classification and object detection method. Furthermore, we use the parallelization technology to speed up the processes of SVM and CNN and other skills to reduce the storage of data. The comparisons with other approaches by testing on different datasets show that the proposed method is more accurately and quickly than other methods.

Keywords: Remote Sensing Big Bata, Earth Observation, Support Vector Machine, Convolutional Neural Networks