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Object Detection among Multimedia Big Data in the Compressive Measurement Domain under Mobile Distributed Architecture

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Abstract

Multimedia big data is difficult to handle because of its enormous amount and the elusive property of underlying information. To study how to explore valuable information among multimedia big data with low complexity, this paper proposes an object detection method of big data, which is in compressive measurement domain under a mobile distributed computing architecture. It includes the sparse representation and object detection processes. Considering the unbalanced computation capacity between a mobile center cloud and mobile edge sites, we shift large storage burden into the cloud, while performing the dictionary learning by using compressive measurements in the mobile edge sites. Specifically, after getting the measurements at the edge sites, we perform dictionary learning to obtain the sparse representation in pixel domain, then select significant images and their feature vectors to be stored in the center cloud. In addition, we also analyze the trained dictionary in the measurement domain employing measurements. In order to reveal the two kinds of dictionaries' relationship, we conduct a formulation process into each of them and find that the relationship depends on the uniqueness relation between the original signal and the sparse coefficient in the measurement domain. At the same time, we keep coefficients for a certain time period at the mobile edge sites in order to realize real time object detection, taking

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