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CLOUD COLONOGRAPHY: DISTRIBUTED MEDICAL TESTBED OVER CLOUD

ABSTRACT

This project proposes, a Cloud Colonography using different types of cloud computing environments. The sizes of the databases from the Computed Tomographic Colonography (CTC) screening tests among several hospitals are explored. These networked databases are going to be available in the near future via cloud computing technologies. Associated Multiple Databases (AMD) was developed in this study to handle multiple CTC databases. When AMD is used for assembling databases, it can achieve very high classification accuracy. The proposed AMD has the potential to play as a core classifier tool in the cloud computing framework. AMD for multiple institutions databases yields high detection performance of polyps using Kernel principal component analysis (KPCA). Two cases in the proposed cloud platform are private and public. We adapted a University cluster as a private platform, and Amazon Elastic Compute Cloud (EC2) as a public. The computation time, memory usage, and running costs were compared using three representative databases between private and public cloud environments. The proposed parallel processing modules improved the computation time, especially for the public cloud environments. The successful development of a cloud computing environment that handles large amounts of data will make Cloud Colonography feasible for a new health care service.