A Hash Algorithm for Directory Tree

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This project aims to make hash-related file operations can be directly processed on directory tree level, as the existing hash algorithms are only for a single message or file, thus limits hash-related operations' performance in multi-file scenarios. A hash algorithm for directory tree, namely DTH algorithm, is designed. DTH algorithm generates folders' hash through DFS recursion and sponge structure mergence. It provides a fast method of directory level data security verification, which can be widely used in data backup, file damage detection, folder comparison and other scenarios. In distributed storage, it also provides a cache method based on directory rather than just files. According to the algorithm evaluation, the DTH algorithm is fast and reliable. It measures up to the application standard to be used as an optimizer, and can be directly used in software development too.

Awards Won:

King Abdulaziz &amp

his Companions Foundation for Giftedness and Creativity: On-line Mawhiba Universal Enrichment Program

King Abdulaziz &amp

his Companions Foundation for Giftedness and Creativity: Award of $500

Association for Computing Machinery: Fourth Award of $500