

Graph Codes - 2D Projections of Multimedia Feature Graphs for Fast and Effective Retrieval

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Abstract : Multimedia Indexing and Retrieval is generally designed and implemented by employing feature graphs. These graphs typically contain a significant number of nodes and edges to reflect the level of detail in feature detection. A higher level of detail increases the effectiveness of the results but also leads to more complex graph structures. However, graph-traversal-based algorithms for similarity are quite inefficient and computation intensive, especially for large data structures. To deliver fast and effective retrieval, an efficient similarity algorithm, particularly for large graphs, is mandatory. Hence, in this paper, we define a graph-projection into a 2D space (Graph Code) as well as the corresponding algorithms for indexing and retrieval. We show that calculations in this space can be performed more efficiently than graph-traversals due to a simpler processing model and a high level of parallelization. In consequence, we prove that the effectiveness of retrieval also increases substantially, as Graph Codes facilitate more levels of detail in feature fusion. Thus, Graph Codes provide a significant increase in efficiency and effectiveness (especially for Multimedia indexing and retrieval) and can be applied to images, videos, audio, and text information.

Keywords : indexing, retrieval, multimedia, graph algorithm, graph code

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