

# Double-bit quantization and weighting for nearest neighbor search

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Abstract Binary embedding is an effective way for nearest neighbor (NN) search as binary code is storage efficient and fast to compute. It tries to convert real-value signatures into binary codes while preserving similarity of the original data. However, it greatly decreases the discriminability of original signatures due to the huge loss of information. In this paper, we propose a novel method double-bit quantization and weighting (DBQW) to solve the problem by mapping each dimension to double-bit binary code and assigning different weights according to their spatial relationship. The proposed method is applicable to a wide variety of embedding techniques, such as SH, PCA-ITQ and PCA-RR. Experimental comparisons on two datasets show that DBQW for NN search can achieve remarkable improvements in query accuracy compared to original binary embedding methods.

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