

Product Quantization for nearest neighbor search [Jegou et al, PAMI 2011]

This paper gives an algorithm for approximate nearest neighbours based upon product quantization.

- The vectors are considered as a concatenation of smaller dimensional vectors and vector quantization is done in this reduced dimensional subspaces.
- The Euclidean distance between two vectors can be computed efficiently from these codes in the lower dimensional subspaces.
- Key idea is to use asymmetric distance computation : query vector is not quantized only database vectors are quantized
- The bounds on the estimator of the squared distance is shown the paper.
- Non exhaustive search for nearest neighbours is sped up using:
 - Coarse quantizer
 - Inverted index