Notes on Vector Retrieval

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# Introductory Notes

A diagram of a number

AI-generated content may be incorrect.Let us consider a text document in English. Strip the document of grammar and word order and we end up with *a set* of words a.k.a. “bag of words” (BoW).

Figure: Vector representation of a piece of text by adopting BoW approach: a text document, when stripped of grammar and word order, is represented by a vector where each coordinate represents a term in our vocabulary and its value records the frequency of that term or represent some function of the frequency. The resulting vectors are *sparse* – that is , they have few non-zero coordinates.

Transformer-based models brought about vector representations that beyond the elementary formation above.

Similarity in vector space must imply similarity between objects. So, as we engineer features to be extracted from an object or design a protocol to learn a model to produce embeddings of data, we must choose the dimensionality of the target space (a subset of ) along with a distance function . Together, these define an inner product of metric space.

Consider the lexical representation of a text document where d is the size of the English vocabulary

# References

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