Homework 1: Vector Search

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1 Faiss
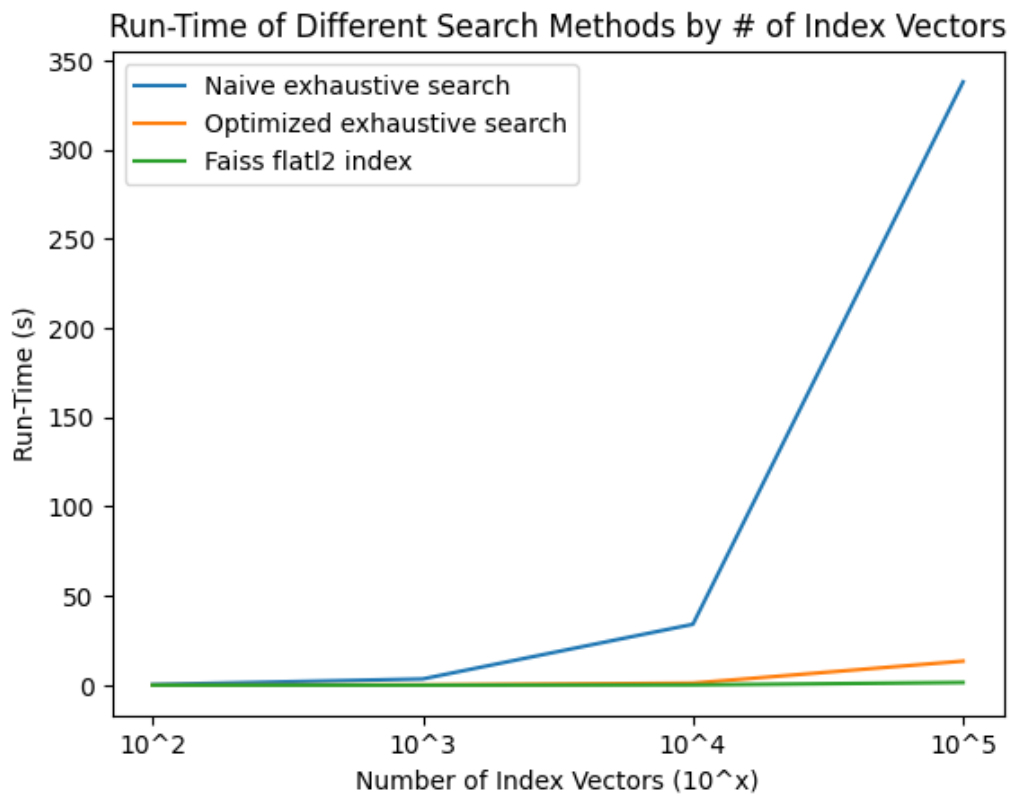
1.1 Running Times

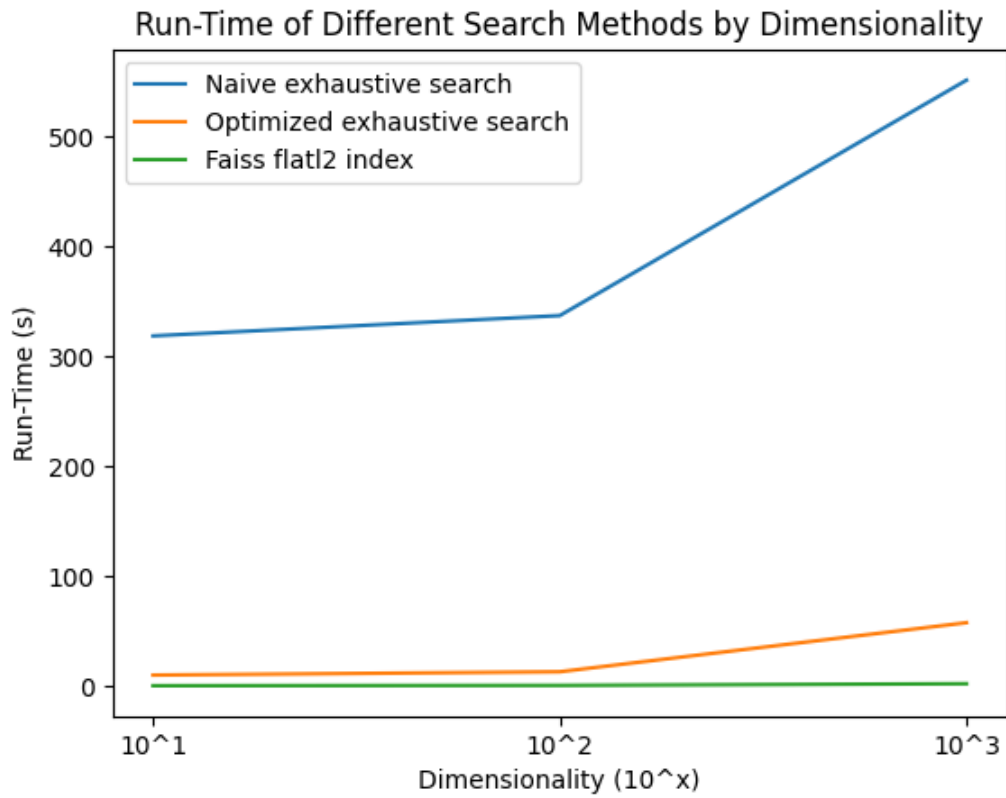Figure 1.1.1: Running times by Number of Index Vectors

Figure 1.1.2: Running times by Dimentionality
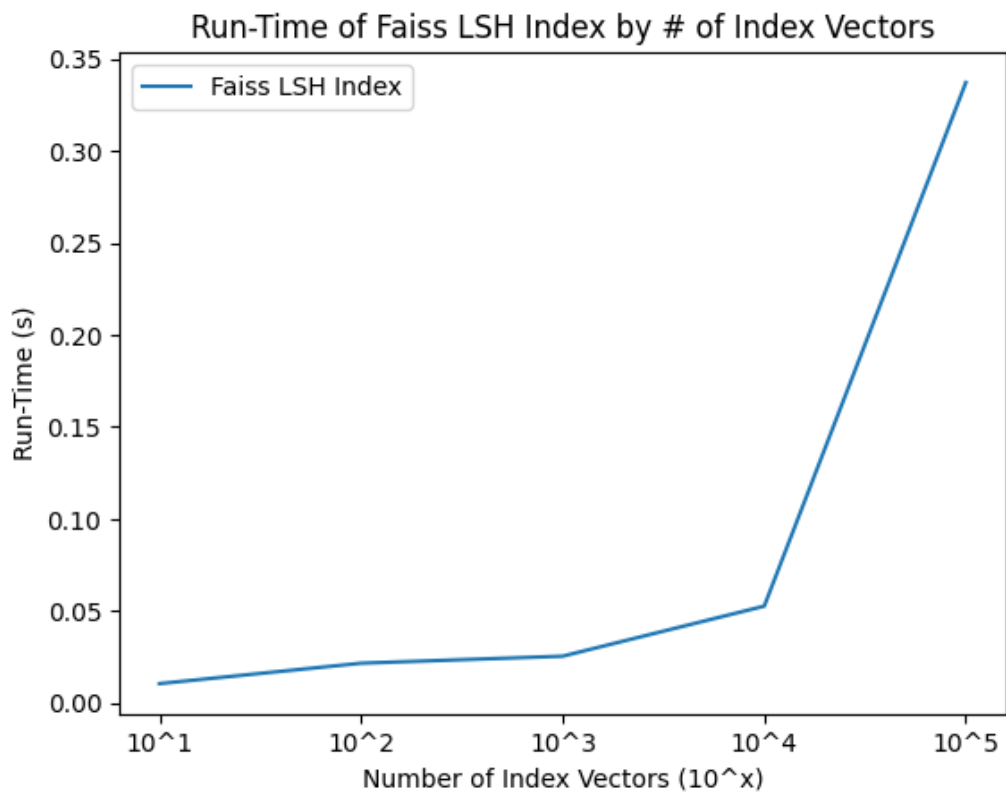
1.2 Faiss LSH

Figure 1.2.1: Running times by Number of Index Vectors
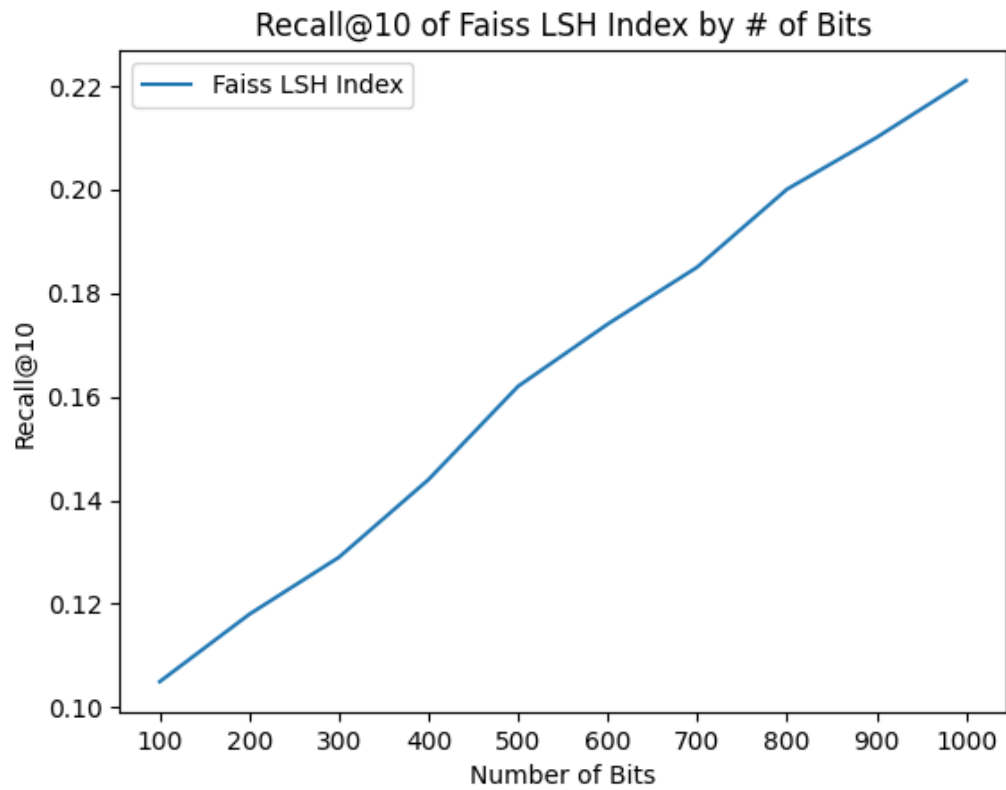
Figure 1.2.2: Running times by Number of Bits

Figure 1.2.3: *Recall*@10 by Number of Bits

2 Implementing an Index

2.1 LSH vs. Native Exhaustive Search

1. Running time of the `semi optimized exhaustive search` function was: **4.14 seconds**.

2. Running time of building the LSH index was: **0.62 seconds**.

3. Running time of LSH search over query vectors was: **0.13 seconds**.

4. *Recall*@10 for the LSH index was: **0.138**.

2.2 Custom Indexing Algorithm