

The performance of similarity search in the unstructured databases largely depends on the employed similarity model. The properties of metric space model enable indexing the data with metric access methods efficiently. But for unconstrained or nonmetric similarity models typical for multimedia, medical, or scientific databases, in which metric postulates do not hold, there exists no general solution so far.

Motivated by the successful application of Ptolemaic indexing to the image retrieval, we introduce SIMDEX Framework which is a universal framework that is capable of revealing alternative indexing methods that will serve for efficient yet effective similarity searching for any similarity model. It explores the axiom space in order to discover novel techniques suitable for database indexing. We review all existing variants (simple I-SIMDEX; GP-SIMDEX and PGP-SIMDEX which both use genetic programming) and we outline how the different groups of domain researchers can benefit from them.

We also describe a real application of SIMDEX Framework to practice while building the Smart Pivot Table indexing method together with advanced Triangle+ filtering for metric spaces empowered by LowerBound Tightening technique. At all cases, we provide extensive experimental evaluations of mentioned techniques.