

**Enabling Semantic Search based on Conceptual Graphs over Encrypted Outsourced Data**

**Abstract:**

Currently, searchable encryption is a hot topic in the field of cloud computing. The existing achievements are mainly focused on keyword-based search schemes, and almost all of them depend on predefined keywords extracted in the phases of index construction and query. However, keyword-based search schemes ignore the semantic representation information of users’ retrieval and cannot completely match users’ search intention. Therefore, how to design a content-based search scheme and make semantic search more effective and context-aware is a difficult challenge. In this paper, for the first time, we define and solve the problems of semantic search based on conceptual graphs(CGs) over encrypted outsourced data in clouding computing (SSCG).We firstly employ the efficient measure of ”sentence scoring” in text summarization and Tregex to extract the most important and simplified topic sentences from documents. We then convert these simplified sentences into CGs. To perform quantitative calculation of CGs, we design a new method that can map CGs to vectors. Next, we rank the returned results based on ”text summarization score”. Furthermore, we propose a basic idea for SSCG and give a significantly improved scheme to satisfy the security guarantee of searchable symmetric encryption (SSE). Finally, we choose a real-world dataset – ie., the CNN dataset to test our scheme. The results obtained from the experiment show the effectiveness of our proposed scheme.