International Journal of Research
Available at https://edupediapublications.org/journals
p-ISSN: 2348-6848
e-ISSN: 2348-795X
Volume 03 Issue 10
June 2016

A Survey on Dynamic multi keyword Ranked search scheme over Encrypted Cloud Data

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ABSTRACT

Due to the developing popularity of cloud computing, increasingly facts owners are influenced to outsource their information to cloud servers for fantastic comfort and decreased price in facts management. However, touchy facts must be encrypted earlier than outsourcing for privateness requirements, which obsoletes data usage like key-word-based file retrieval. In this paper, we present a comfortable multi-key-word ranked seek scheme over encrypted cloud facts, which simultaneously supports dynamic update operations like deletion and insertion of documents. Mainly, the vector area model and the widely-used TF_IDF model are shared inside the index production and query era. We assemble a unique tree-based totally index shape and advocate a "greedy intensity-first search" algorithm to offer efficient multi-key-word ranked seek. The secure kNN algorithm is utilized to encrypt the index and query vectors, and in the meantime make sure correct relevance rating calculation among encrypted index and question vectors. As a way to defy statistical attacks, phantom terms are introduced to the index vector for blinding seek outcomes. Because of using our unique tree-based index structure, the proposed scheme can attain sub-linear search time and deal with the deletion and insertion of files flexibly. Massive experiments are carried out to demonstrate the efficiency of the proposed scheme.

Keywords: Searchable encryption; multi-keyword ranked search; dynamic update; cloud computing

INTRODUCTION: CLOUD computing has been measured as a brand new version of company IT infrastructure, that can set up huge resource of computing, garage and

packages, and allow users to have ubiquitous, handy and on-call for network access to a shared pool of configurable computing assets with incredible efficiency and minimum financial overhead .Attracted through these appealing features, both individuals and corporations are influenced to outsource their records to the cloud, rather of purchasing software program and hardware to manage the statistics themselves. In spite of of the various benefits of cloud services, outsourcing sensitive information (such as e-mails, private health information, employer finance information, government documents, etc.) to faraway servers brings privateness concerns. The cloud carrier carriers (CSPs) that carry on the information for customers may also get right of entry to customers' sensitive statistics without authorization. A general technique to maintain the facts confidentiality is to encrypt the records earlier than outsourcing . But, this can motive a massive price in terms of information usability. As an instance, the prevailing techniques on keyword based facts retrieval, which might be widely used at the plaintext records, can't be immediately carried out on the encrypted data. Downloading all the facts from the cloud and decrypt regionally is obviously impractical. Which will deal with the above hassle, researchers have designed a few general-purpose answers with absolutely-homomorphism encryption or oblivious RAMs . However, these techniques are not realistic because of their excessive computational overhead for both the cloud sever and consumer. At the opposite, greater realistic special purpose answers, including searchable encryption (SE) schemes have made specific contributions in terms of performance, functionality and protection. Searchable encryption schemes allow the consumer to store the encrypted information to the cloud and execute key-word search over cipher text domain. To date, considerable works were proposed below exceptional hazard fashions to gain diverse seek capability, consisting of single keyword search, similarity seek, multi-keyword boolean search, ranked seek, multi-key-word ranked Seek, and many others. Among them, multikeyword ranked search achieves increasingly interest for its practical applicability. Currently, a few dynamic schemes had been proposed to assist putting and deleting operations on file series. Those

are substantial works as it's miles particularly viable that the facts owners need to replace their data at the cloud server. But few of the dynamic schemes aid green multikeyword ranked search Our contributions are summarized as follows:1) We design a searchable encryption scheme that helps both the correct multi-keyword ranked search and bendy dynamic operation on file series.2) because of the unique structure of our tree-primarily based index, the search complexity of the proposed scheme is basically kept to logarithmic. And in exercise, the proposed scheme can do higher search performance by using executing our "grasping depth-first search" set of rules. Moreover, parallel seek may be flexibly performed to further lessen the time value of seek procedure.

RELATED WORK

Searchable encryption schemes permit the clients to save the encrypted data to the cloud and execute keyword seek over cipher textual content domain. Because of one of a kind cryptography primitives, searchable encryption schemes can be constructed the usage of public key based cryptography or symmetric key based totally cryptography track et al proposed the primary symmetric searchable encryption (SSE) scheme, and the quest time of their scheme is linear to the size of the information collection. Goh proposed formal protection definitions for SSE and designed a scheme based totally on Bloom clear out. The search time of Goh's scheme is O (n), in which n is the cardinality of the record collection. Curtmola et al. Proposed two schemes (SSE-1 and SSE-2) which achieve the ultimate search time. Their SSE-1 scheme is comfortable in opposition to selected-key-word attacks (CKA1) and SSE-2 is secure in opposition to adaptive chosen-keyword assaults (CKA2). These early works are single key-word Boolean seek schemes, which might be quite simple in phrases of capability. Later on, abundant works were proposed below one of a kind chance models to acquire various seek functionality, which include single key-word seek, similarity search multi-key-word Boolean search ranked seek and multi-keyword ranked search and so on. Multi-keyword Boolean search permits the customers to enter multiple query key phrases to request appropriate documents. Amongst these works, conjunctive keyword seek schemes best return the files that contain all of the

question key phrases. Disjunctive keyword search schemes] return all the documents that comprise a subset of the question key phrases. Predicate seek schemes are proposed to guide both conjunctive and disjunctive search. Some of these multikeyword search schemes retrieve search outcomes based totally at the existence of keywords, which can not provide acceptable end result ranking capability. Ranked search can enable quick search of the maximum relevant records. Sending again only the topk most relevant documents can correctly decrease network site visitors. A few early works have realized the ranked search the use of order-keeping techniques, however they are designed simplest for unmarried key-word search. Cao et al. Realized the first privateness-maintaining multi-keyword ranked search scheme, in which files and queries are represented as vectors of dictionary size. With the "coordinate matching", the files are ranked in line with the variety of matched query keywords. However, Cao et al.'s scheme does now not recollect the significance of the one-of-a-kind keywords, and hence isn't correct sufficient. In addition, the quest efficiency of the scheme is linear with the cardinality of file collection. Solar et al. Provided a comfortable multi-key-word seek scheme that helps similarity-primarily based ranking. The authors constructed a searchable index tree based totally on vector space version and adopted cosine degree collectively with TF×IDF to offer ranking consequences. Sun et al.'s search algorithm achieves better-than-linear seek performance however consequences in precision loss. O¨ rencik et al. Proposed a secure multi-keyword search technique which applied nearby sensitive hash (LSH) features to cluster the similar files. The LSH set of rules is appropriate for comparable search but can't offer precise rating. In Zhang et al. Proposed a scheme to address relaxed multi-keyword ranked search in a multiowner version. On this scheme, distinctive facts proprietors use specific secret keys to encrypt their files and key phrases while authorized information users can query with out understanding keys of those distinct information owners. The authors proposed an "Additive Order preserving feature" to retrieve the maximum applicable seek effects. But, these works don't guide dynamic operations. Almost, the records

owner may additionally want to update the file series after he add the gathering to the cloud server. For that reason, the SE schemes are anticipated to help the insertion and deletion of the files. There are also numerous dynamic searchable encryption schemes. Within the work of tune et al the each file is considered as a series of fixed duration phrases, and is personally listed. This scheme helps honest replace operations but with low efficiency. Goh proposed a scheme to generate a sub-index (Bloom clear out) for each report based on key phrases. Then the dynamic operations may be easily realized via updating of a Bloom filter together with the corresponding document. However, Goh's scheme has linear seek time and suffers from false positives. In 2012, Kamara et al constructed an encrypted inverted index that can cope with dynamic facts efficaciously. But, this scheme may be very complex to put into effect. Subsequently, as an improvement, Kamara et al. Proposed a brand new seek scheme based totally on tree-based totally index, which can take care of dynamic replace on document statistics saved in leaf nodes. However, their scheme is designed only for singlekeyword Boolean seek. In , coins et al. Supplied a information shape for key-word/identity tuple named "TSet". Then, a report may be represented by way of a series of independent T-sets. Based totally on this structure, cash et al. Proposed a dynamic searchable encryption scheme. Of their creation, newly introduced tuples are saved in any other database in the cloud, and deleted tuples are recorded in a revocation listing. The very last seek result is executed via with the exception of tuples in the revocation list from the ones retrieved from original and newly added tuples. Yet, cash et al.'s dynamic search scheme doesn't comprehend the multikeyword ranked search capability.

SYSTEM ARCHITECTURE:

1. The DFD is likewise called as bubble chart. It is a simple graphical formalism that may be used to symbolize a device in terms of enter

records to the machine, numerous processing achieved in this information, and the output records is generated by means of this device

2. The records waft diagram (DFD) is one of the most important modeling equipment. It's miles used to version the device components. Those components are the device process, the data utilized by the process, an outside entity that interacts with the device and the information flows in the device
3. DFD shows how the facts actions thru the gadget and how it's miles changed by means of a sequence of ameliorations. It is a graphical technique that depicts statistics flow and the changes that are applied as information moves from input to output

EXISTING SYSTEM: A popular technique to store from damage the records confidentiality is to encrypt the statistics earlier than outsourcing. Searchable encryption schemes allow the purchaser to shop the encrypted information to the cloud and execute key-word seek over cipher text domain. To date, plentiful works have been proposed under distinctive threat models to obtain diverse seek capability, which includes unmarried keyword search, similarity search, multi-keyword Boolean seek, ranked seek, multi-keyword ranked search, and so on. Among them, multi-keyword ranked search achieves more and more interest for its practical applicability. Recently, a few dynamic schemes had been proposed to assist putting and deleting operations on record collection. These are tremendous works as it is highly feasible that the statistics owners need to update their information at the cloud server.

DISADVANTAGES OF EXISTING SYSTEM: large cost in terms of information usability. For instance, the prevailing techniques on keyword-based totally facts retrieval, which might be extensively used on the plaintext records, can not be immediately implemented at the encrypted records. Downloading all

the statistics from the cloud and decrypt regionally is obviously impractical. Current device strategies not realistic because of their excessive computational overhead for each the cloud sever and user.

PROPOSED SYSTEM: This paper proposes a comfy treebased search scheme over the encrypted cloud records, which supports multi-keyword ranked seek and dynamic operation at the file series. Specially, the vector space version and the broadly-used "time period frequency (TF) × inverse document frequency (IDF)" version are mixed in the index construction and question era to offer multi-keyword ranked seek. In an effort to achieve high seek performance, we assemble a tree-primarily based index structure and suggest a "greedy depth-first seek" set of rules primarily based in this index tree. The comfy ken algorithm is utilized to encrypt the index and question vectors, and meanwhile ensure accurate relevance rating calculation between encrypted index and query vectors. To face up to exclusive attacks in specific threat fashions, we construct two comfortable seek schemes: the basic dynamic multi-key-word ranked search (BDMRS) scheme in the acknowledged cipher text model, and the enhanced dynamic multi-key-word ranked search (EDMRS) scheme within the recognised historical past model.

ADVANTAGES OF PROPOSED SYSTEM: Because of the unique structure of our tree-based totally index, the proposed search scheme can flexibly obtain sub-linear seek time and deal with the deletion and insertion of documents. We layout a searchable encryption scheme that supports both the accurate multi-key-word ranked search and flexible dynamic operation on document collection. Because of the special shape of our tree-based totally index, the hunt complexity of the proposed scheme is basically saved to logarithmic. And in exercise, the proposed scheme can achieve better search efficiency by executing our

"grasping intensity-first search" set of rules. Moreover, parallel seek can be flexibly carried out to further reduce the time value of seek technique.

CONCLUSION : On this paper, a secure, green and dynamic search scheme is projected, which helps now not most effective the correct multi-keyword ranked search however also the dynamic deletion and insertion of files. We assemble a unique keyword balanced binary tree because the index, and suggest a "greedy intensity-first seek" set of rules to discover higher performance than linear seek. In addition, the parallel seek method may be carried out to similarly lessen the time cost. The safety of the scheme is covered towards threat fashions through the use of the comfortable kNN algorithm. Experimental outcomes show the performance of our proposed scheme. There are nonetheless many undertaking troubles in symmetric SE schemes. In the proposed scheme, the data owner is chargeable for producing updating facts and sending them to the cloud server. As a consequence, the information owner needs to save the unencrypted index tree and the information which can be essential to recalculate the IDF values. Such an active statistics owner won't be very appropriate for the cloud computing version. It could be a vital but difficult future work to plot a dynamic searchable encryption scheme whose updating operation may be completed by way of cloud server most effective, meanwhile booking the capacity to aid multi-key-word ranked seek. Further, because the most of works approximately searchable encryption, our scheme specifically considers the undertaking from the cloud server. Certainly, there are many cozy demanding situations in a multi-user scheme. First of all, all the users normally preserve the identical secure key for trapdoor technology in a symmetric SE scheme. In this example, the revocation of the user is massive project. If it is needed to

revoke a person on this scheme, we want to rebuild the index and distribute the new cozy keys to all the authorized users. Secondly, symmetric SE schemes generally wager that each one the data users are trustworthy. It is not practical and a bent records consumer will cause many at ease problems. For instance, a dishonest data consumer might also search the files and distribute the decrypted documents to the unauthorized ones. Even extra, a bent data consumer may additionally distribute his/her comfy keys to the unauthorized ones. In the destiny works, we will try and enhance the SE scheme to take care of these challenge troubles.

REFERENCES

[1] K. Ren, Cowing, Q.Wang et al., "Security challenges for the publiccloud," IEEE Internet Computing, vol. 16, no. 1, pp. 69–73, 2012.

[2] S. Kamara and K. Lauter, "Cryptographic cloud storage," in Financial Cryptography and Data Security. Springer, 2010, pp. 136–149.

[3] C. Gentry, "A fully homomorphic encryption scheme," Ph.D. dissertation, Stanford University, 2009.

[4] O. Goldreich and R. Ostrovsky, "Software protection and simulation on oblivious rams," Journal of the ACM (JACM), vol. 43, no. 3, pp. 431–473, 1996.

[5] D. Boneh, G. Di Crescenzo, R. Ostrovsky, and G. Persiano, "Public key encryption with keyword search," in Advances in Cryptology-Eurocrypt 2004. Springer, 2004, pp. 506–522.

[6] D. Boneh, E. Kushilevitz, R. Ostrovsky, and W. E. Skeith III,"Public key encryption that allows pir queries," in Advances in Cryptology-CRYPTO 2007. Springer, 2007, pp. 50–67.

[7] D. X. Song, D. Wagner, and A. Perrig, "Practical techniques for searches on encrypted data," in Security and Privacy, 2000. S&P 2000. Proceedings. 2000 IEEE

Symposium on. IEEE, 2000, pp. 44–55.

[8] E.-J. Goh et al., "Secure indexes." IACR Cryptology ePrint Archive, vol. 2003, p. 216, 2003.

[9] Y.-C. Chang and M. Mitzenmacher, "Privacy preserving keyword searches on remote encrypted data," in Proceedings of the Third international conference on Applied Cryptography and Network Security. SpringerVerlag, 2005, pp. 442–455.

[10] R. Curtmola, J. Garay, S. Kamara, and R. Ostrovsky, "Searchable symmetric encryption: improved definitions and efficient constructions," in Proceedings of the 13th ACM conference on Computer and communications security. ACM, 2006, pp. 79–88.

[11] J. Li, Q. Wang, C. Wang, N. Cao, K. Ren, and W. Lou, "Fuzzy keyword search over encrypted data in cloud computing," in INFOCOM, 2010 Proceedings IEEE. IEEE, 2010, pp. 1–5.

[12] M. Kuzu, M. S. Islam, and M. Kantarcioglu, "Efficient similarity search over encrypted data," in Data Engineering (ICDE), 2012 IEEE 28th International Conference on. IEEE, 2012, pp. 1156–1167.

[13] C. Wang, K. Ren, S. Yu, and K. M. R. Urs, "Achieving usable and privacy-assured similarity search over outsourced cloud data," in INFOCOM, 2012 Proceedings IEEE. IEEE, 2012, pp. 451–459.