ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 4, April 2015

Authenticating Location Based Nearest Neighbour Search with Keywords

N.Minojini[1], D.Daniel[2], S.Jothi[3], K.R.Saranya[4]

PG Student [CSE], Dept. of CSE, Dr.N.G.P Institute of Technology, Coimbatore, Tamilnadu, India [1]

Assistant Professor, Dept. of CSE, Dr.N.G.P Institute of Technology, Coimbatore, Tamilnadu, India [2]

PG Student [CSE], Dept. of CSE, Dr.N.G.P Institute of Technology, Coimbatore, Tamilnadu, India [3]

PG Student [CSE], Dept. of CSE, Dr.N.G.P Institute of Technology, Coimbatore, Tamilnadu, India [4]

ABSTRACT: The boom of smart phones brings prosperity to location primarily based services (LBSs) in most social and business sectors, like geo-social networks, merchandizing, marketing and supply. While these LBSs drive new business opportunities, there is a rising necessity from the mobile users to verify the genuineness of service results, such as a list of recommended local restaurants sorted by location and user rating. This issue is even a lot of vital in associate outsourced model where businesses (or data owners) publish their data to a third-party service provider (SP), who handles LBS queries based on these data. As the SP is alleged to manipulate query results in favor of their "sponsors", to sustain growth amid fierce competition, it will provide users not only the results, but also the proof of correctness. We proposed privacy-preserving authentication for location-based range queries. Being the primary work to deal with location privacy in authentication, the techniques can't be applied to alternative queries. As location based publicity and recommendation square measure usually recognized together of the foremost profitable LBS businesses and so provoke the best difference of opinion with their ranking results.

KEYWORDS: Data Outsourcing, Skyline Query, Authentication

I. INTRODUCTION

With the fast development of mobile handset devices (such as smart phones and telephone set computers), wireless communication, and positioning technologies within the past decade, Location primarily based services (LBSs) have prospered. Users carrying location-aware cell devices square measure able to query LBSs for close points of interest (POIs) anywhere and at any time. Among the many varieties of location-based queries, one necessary class is location-based skyline queries. These queries take into consideration each the spatial and non-spatial attributes of the POIs.

A representative example is finding near restaurants with smart food, wherever the gap to the querying user could be a spatial attribute and therefore the goodness of the food could be a non -spatial attribute. The query returns a group of restaurants that square measure nearer to the querying user and or have higher food than those not came back. In general, whereas spatial objects can have a lengthy list of non-spatial attributes—such as food quality, service, hygiene, atmosphere, and price—only a little set of those attributes (termed a subspace) is of interest to a selected user in a very single question. Moreover, altogether totally different users might need different preferences—e.g., Madonna prefers vogue, whereas Tom bothered about hygiene, atmosphere, and price.

To proportion LBSs at the side of their ever-growing quality, a rising trend is to supply info management and repair provisioning to Cloud service suppliers (CSPs) like Amazon EC2 and Google App Engine. Specifically, an information owner delegates its data to a CSP that successfully provides query services to clients on behalf of the information owner. Whereas such associate degree outsourcing model is advantageous in terms important, performance, and flexibility in resource management, it brings an honest challenge to query integrity assurance.

• We have a tendency to establish the matter of authenticating LASQs in outsourced databases. To the most effective of our information, this study is that the 1st attempt to investigate this drawback.

ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 4, April 2015

• For a one-shot LASQ authentication, we have a tendency to propose a basic Merkle Skyline R-tree methodology and a Partial-S4-tree methodology, about to scale back the server time interval and minimize the VO size. We have a tendency to develop a perfecting-based approach for authenticating continuous LASQs. This approach allows the clients to re-evaluate new LASQ results domestically throughout movement, so reducing each communication and computation prices.

• we have a tendency to conduct in depth experiments to judge the performance of the projected strategies and algorithms. The results show that our projected strategies considerably surpass the essential authentication formula by up to sixty nine in terms of the question latency and up to 74 in terms of the VO size.

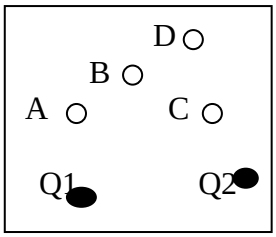
II. RELATED WORK

A. LOCATION-BASED SKYLINE QUERIES (LSQS)

We take into account a collection of knowledge objects O. Every object o ∈ O is associated with a 2d spatial location attribute (denoted by o.x and o.y) and several other non-spatial attributes (e.g., parking fee and repair quality, is denoted by o.Ai for the ith non-spatial attribute). During this paper, we have a tendency to use the Euclidian distance metric to live the spatial proximity.

Suppose we've four carparks (i.e., a, b, c, and d) and two query points (i.e., q1 and q2). The non-spatial attributes of the four carparks are shown in the fig 1 , wherever low parking fee and high service quality are most popular. If the query is issued at q1, the LSQ result is as a result of c is dominated by b and d is dominated by both a and b; if the query is issued at q2, the LSQ result's as a result of they dominate a and d however not one another.

Given an LSQ question, the authentication drawback is however to construct the VO for the consumer to verify the correctness of the question results. It involves three connected problems : i) ADS style on the information owner; ii) dynamic VO construction for every LSQ question on the LBS server; iii) result verification supported the received VO on the consumer.



CARPARING	PARKING FEE	SERVICE QUALITY
A	14	5
B	13	6
C	11	4
D	17	2

Figure 1 : An Example of LSQ

B.QUERY AUTHENTICATION AND MR-TREE

Authenticated query process has been studied for an extended time. So ,most previous work on query authentication depends on degree ADS referred to as Merkle B-tree [2]. Yang et al. [7] 1st introduced this downside to the spatial information domain and studied the authentication of spatial vary queries. They projected associate real index structure mentioned as MRtree , which combines the concepts of Merkle B-tree and R-tree. Exemplifies the index structure of MR-tree. The data objects of, every leaf node among the MR-tree is said to that of R-tree method, where it is storing pointers to actual data objects. The digest of the leaf node is obtained by hashing the concatenation of the binary representations of all objects within the each node. Each internal node contains variety of entries within the form of (ptri,MBRi,Hi),1 wherever ptri, MBRi, and Hi area unit the pointer, the minimum bounding parallelogram, and therefore the digest of the i-th child, severally. The digest of an enclosed node summarizes the MBRs and digests of all youngsters nodes (e.g., H1 and H2)in the utilization of digests makes possible the pruning of index nodes within the VO whereas having the ability to verify the correctness of question results.

In [7], the authors additionally provided a baseline answer to authenticating general skyline queries. The essential plan is to convert a skyline query to a variety query. Assuming the skyline results are p1, p7, and p9 . To construct the VO, the LBS server only has to method a range question with the shaded space because the query vary as a result of all objects within the blank space are dominated by a minimum of one skyline object. However, this resolution is effective just for static skyline queries, however not for LSQs wherever question points are dynamic. Though it may be custom -

ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 4, April 2015

made to LSQs, it is less efficient than our two planned strategies, as are shown in the performance analysis in section-5 with the followed sections, we have a tendency to gift the planned strategies for the LSQ authentication drawback.

III. PROPOSED WORK

Query authentication solutions have been proposed for outsourced relational databases. Digital signature aggregation to ensure data integrity and authenticity for outsourced databases. The techniques cannot assure completeness of the result set aggregated signature in order to sign each record with the information from neighboring records by assuming that all the records are sorted in a certain order. Their mechanism helps users verify that query results are both complete and authentic. In addition, the challenge token scheme is for a server running outsourced databases to provide a proof of the actual query execution, is checked at the client side for integrity verification. Compared to, the scheme also supports more query types without assuming that all the records are sorted. Nonetheless, none of the techniques are specifically designed for spatial databases. Since the query distance is outlined by network distance in a road network, the skyline scope outlined in existing system not works that requires new authentication ways. Moreover, we tend to are interested in studying the authentication drawback for dynamic objects, wherever a way to guarantee the freshness of query results may be a very difficult issue. In proposed system works with multiple information owners and finding the shortest path . As an example, the POIs and also the road networks will return from two totally different information owners. Hence, a way to handle the query verification drawback within the presence of multiple information owners is additionally an interesting direction to explore.

ADVANTAGE

- Verification protocol is used.
- Root signature is used to find the owner data.
- Multiple data owners are used in this technology

IV. EXPERIMENTAL RESULTS

The implementation of the paper is divided into five modules. They are web search engine creation, road network and skyline query, data provider ,authenticated query processing, shortest path on road network using voronoi diagram.

The first module is the process of web search engine creation. User interface style or interface engineering is that the style of computer machines and mobile communication devices, software package applications, and websites with the main focus on the user's experience and interaction. The goal of interface style is to create the user\'s interaction as straightforward and efficient as potential, in terms of accomplishing user goals—what is commonly referred to as user-centred style. To run our remote system we tend to develop a GUI application in J2EE. User will simply execute the project with the help of GUI.

The second module is the of road network and skyline query. A road network will be considered as a graph with positive weights. The nodes represent road junctions and every edge of the graph is related to a road phase between two junctions. The load of an edge may correspond to the length of the associated road section, the time required to traverse the phase or the value of traversing the phase. Exploitation directed edges it's in addition potential to model one-way streets. Such graphs area unit special within the sense that some edges area unit additional vital than others for long distance travel. All of these algorithms adding two phases, at intervals of the first half, the graph is pre-processed while not knowing the availability or target node. The second part is that the query part , during this part, supply and target node area unit noted. The location-based skyline queries are to search out the close spatial object with smart services wherever the space to the querying user could be a spatial attribute and therefore the goodness of the objects. The query returns a collection of result that\'s nearer to the client current position.

The third module is the data provider. To scale up services there has been a rising trend of outsourcing information management to service providers, which offer query services to clients on behalf of knowledge owners. Outsourcing spatial data bases to the provides a cost-effective and versatile means for information owners to deliver spatial data to

ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 4, April 2015

users of location-based services. data as a Service, or DaaS, could be a relation of computer code as a service. Like all members of Service (aaS) family, DaaS relies on the idea that the commodity, data during this case, may be provided on demand to the user no matter geographic or structure separation of provider and consumer. In extension, the development of service-oriented design (SOA) has rendered the particular platform on that the information resides additionally unrelated. So, this development has enabled the recent emergence of the comparatively new idea of DaaS.
The fourth module is the authenticated query processing. Authenticated knowledge structures are a model of computation wherever untrusted responders answer queries on an information structure on behalf of a sure source and supply an indication of the validity of the solution to the user. We've an solution to present a survey of techniques for coming up with an authenticated information structures and outlining their machines efficiency. The data owner obtains, a certificate authority (e.g., VeriSign), through a combination of private and public keys of digital signatures. Before delegation a spatial dataset to the Cloud service providers CSP, the data owner builds associate degree authenticated system (ADS) of the dataset. To support economical query process, ADS area unit is a tree-like index structure, wherever the root is signed by the data owner is using his/her private key. The CSP keeps the spatial dataset, however as a result of the ADS and its root signature. Once its receiving a query from the client, the CSP is returning the query results, the root sign, and a verification object , that's creating the supporting ADS. The client is authenticating the correctness of the query results using the returned VO, the root signature, and therefore the knowledge owner's public key.

The fifth module is shortest path on road network using voronoi diagram. The shortest path between two given locations in a road network is an important problem that finds applications in various map services and commercial navigation products. The normal road network is defining the distance between two points is measured by the road network distance instead of their Euclidean distance, assuming that objects can only move along pathway systems. The network Voronoi cell (NVC) of pi and the network Voronoi diagram can be defined as follows .The network Voronoi cell V(pi) contains all points on edges that are closer to pi than to any other point - of -interest . It is shortest path tree generated from pi, and hence pi is also called the generator of V(pi). It is different from the Voronoi Diagram in the Euclidean space where each Voronoi cell is the continuous area, and network Voronoi cell of each generator contains a set of road segment. So ,Voronoi(p1), Voronoi(p2), and Voronoi(p3) are represented by line segments with different styles separated by points b1-b7. Since objects are blocked on road segments, the network Voronoi cell of a specific generator is different. So, finally the network Voronoi diagram is particular. Property one is still accurate for the network Voronoi diagram. Given the set of POIs, one can construct the network Voronoi diagram by expanding shortest path trees from each POI simultaneously until the shortest path trees meet. The meeting points, termed as border points, are also on the edges of the road network with the property that the costs (e.g., road network distances) from the meeting point to the two neighboring POIs are equal to each other.

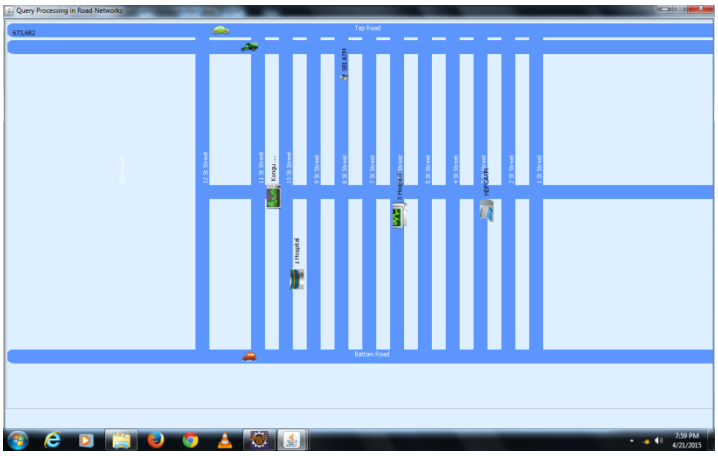


Figure 2. Query Processing in Road Network

ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 4, April 2015

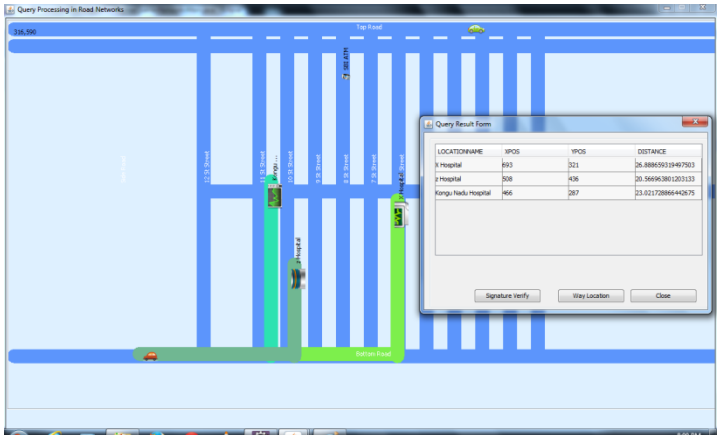


Figure 3: Output

V. CONCLUSION

In this paper, we've studied the matter of authenticating location-based skyline queries in absolute subspaces (LASQs). we have a tendency to proposed a basic MSR-tree authentication technique by extending our previous work on skyline query authentication. To change authentication for large scale datasets and subspaces, thus we've additional projected a Partial-S4-tree technique, throughout that most of the redundant objects could also be merely familiar and filtered out from the VO. For authenticating continuous LASQs, we've proposed a pre fetching-based answer to avoid frequent query issuances and VO transmissions. comprehensive experimental results demonstrate the efficiency of our ways and algorithms below varied system settings. Specifically, our projected Partial-S4-tree technique outperforms the essential authentication technique by up to 69% for the duration of terms of the query latency and up to 74% for the duration of terms of the VO size.

REFERENCES

[1] N. Beckmann, H.-P. Kriegel, R. Schneider, and B. Seeger, "The R*-tree: An efficient and robust access method for points and rectangles,"in *SIGMOD*, Atlantic City, NJ, USA, 1990, pp. 322–331.
[2] M. Berg, O. Cheong, and M. Kreveld, "*Computational Geometry: Algorithms and Applications*," 3rd ed., Berlin, Germany: Springer,2008, ch. 7.
[3] S. Borzonyi, D. Kossmann, and K. Stocker, "The Skyline operator," in *Proc. ICDE*, Heidelberg, Germany, 2001, pp. 421–430.
[4] Q. Chen, H. Hu, and J. Xu, "Authenticating Top-k queries in location-based services with confidentiality," in *PVLDB*, Hangzhou, China, 2014.
[5] J. Chomicki, P. Godfrey, J. Gryz, and D. Liang, "Skyline with presorting," in *Proc. ICDE*, 2003.
[6] H. Hu, J. Xu, and D. L. Lee, "A generic framework for monitoring continuous spatial queries over moving objects," in *SIGMOD*, Baltimore, MD, USA, 2005.
[8] H. Hu, J. Xu, Q. Chen, and Z. Yang, "Authenticating locationbased services without compromising location privacy,"in *SIGMOD*, 2012.
[7] H. Hu, Q. Chen, and J. Xu. "VERDICT: Privacy-preserving authentication of range queries in location-based services," in *ICDE*, Brisbane, QLD, Australia, 2013 (Demo).
[8] L. Hu, W.-S. Ku, S. Bakiras, and C. Shahabi, "Spatial query integrity with voronoi neighbors," *IEEE Trans. Knowl. Data Eng.*, vol. 25, no. 4, pp. 863–876, Apr. 2013.
[9] Z. Huang, H. Lu, B. C. Ooi, and K. H. Tong, "Continuous skyline queries for moving objects," *IEEE Trans. Knowl. Data Eng.*, vol. 18, no. 12, pp. 1645–1658, Dec. 2006.
[10] Y. Gao and B. Zheng, "Continuous obstructed nearest neighbor queries in spatial databases," in *Proc. ACM SIGMOD*, Providence, RI, USA, 2009, pp. 557–590.
[11] D. Kossmann, F. Ramsak, and S. Rost, "Shooting stars in the sky: An online algorithm for skyline queries," in *VLDB*, Hong Kong, China, 2002.
[12] R. C. Merkle, "A certified digital signature," in *CRYPTO*, Santa Barbara, CA, USA, 1989.
[13] E. Mykletun, M. Narasimha, and G. Tsudik, "Signature bouquets: Immutability for aggregated/condensed signatures," in *ESORICS*, Sophia Antipolis, France, 2004.