ELOQUENT SALVATION AND PRODUCTIVE OUTSOURCING OF BIG DATA

Abdul kalam Asath K[1], Balaji S[2], Balamurali P[3], Kalaiarasi P[4]

[1, 2, 3]Department of Computer Science and Engineering, Agni College of Technology
[4]Assistant professor, Computer Science and Engineering Department, Agni College of technology
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Abstract - *Big data is anticipated to deliver a significant impact in the coming years. We'll be looking at some of the ways that businesses are using data to supercharge their operations. Towards this goal, a critical underlying task is to solve a series of large-scale fundamental problems. The end goal is to help businesses make better, more informed decisions, allowing them to tap into a range of advantages. The applications and practices which make sense and use of all the information, creating a new era of smart farming for the world to behold. Conducting such large-scale data analytics in a timely manner requires a large number of computing resources, which may not be available for individuals and small companies in practice. By outsourcing their computations, we can solve such problems in a cost-effective way. For the first time in the literature, we present an efficient, secure outsourcing scheme for convex separable programming problems (CSPs). In particular, we first develop efficient matrix and vector transformation schemes only based on arithmetic operations that are computationally indistinguishable both in value and in the structure under a chosen-plaintext attack (CPA). Then, we design a secure outsourcing scheme in which the client and the database collaboratively solve the transformed problems. The client can efficiently verify the correctness of returned results to prevent any malicious behavior of the database. This algorithm will not allow the unauthorized user to modify the database and it provides better security.*

Key Words: **Convex separable programming, Data security, Privacy, Big data, Data integrity.**

1. Introduction:

Any business possesses and generates a database of information on transactions, communications, infrastructure or processes. It's arguably the most valuable asset for any organization. So it is in a business' best interests to make sure the safety of this information. When we take proper measures to secure our data, it is kept out of the hands of our competitors. The data integrity is retained, and it enables easy access wherever and whenever it's required for business operations. Failing to do so, increases the chances of vital information falling into the wrong hands or be rendered useless. The goal of database security is to prevent unauthorized or accidental access to data. Because the database environment has become more complex and more decentralized, management of data security and integrity has become a more complex and time consuming job for database administrators. The National Security Agency (*NSA*) says that every year 300 million hacking attempts are registered. So we are going to implement new concept which

helps to maintain data integrity in an efficient manner. When the database is accessed by some unauthorized user, then this concept will not allow the unauthorized user to update or modify the database.

2. Scope of the Project:

Researchers have estimated that by 2050, the world's population will reach 10 billion. This clearly means that food consumption will be double to fulfill the need for such a significant number of populations. Almost 40% of the earth's surface is already in use for agriculture, and surprisingly a tremendous amount of production goes in the waste throughout the process. Big Data provides a helping hand for every problem and complexities in agriculture. Big data provides farmers granular data on rainfall patterns, water cycles, fertilizer requirements, and more. This enables them to make smart decisions, such as what crops to plant for better profitability and when to harvest.

It plays a crucial role in establishing an advanced and smart agricultural system. Farmers around the world may often get confused in decision making regarding the type of crop to be harvested. With the help of Big Data analytics, predictions are drawn from the previous year's climatic conditions, the nutrients of the soil, rainfall, etc. These wise decisions with Big Data help to yield maximum production and help to grow the economic sector for the production of food. So the concept of Convex Separable Programming will be implemented in the field of agriculture.

3. Chosen-plaintext attack:

Chosen plaintext attack is defined as when the unauthorized user who access the database without key and modifies the particular text data in the database. In previous works, the overcome the above problem cryptographic techniques like homomorphic encryption is used. But the techniques are significantly increase the computational complexity of solving a large-scale problem and is impractical for large data applications. For the first time in the literature, we present an efficient, secure outsourcing scheme for convex separable programming problems

4. Convex Separable Programming:

Convex Separable programming is an algorithm that allows a convex nonlinear program to be approximated with arbitrary accuracy with a linear programming model. The idea is to replace each nonlinear function with a piecewise linear approximation. A nonlinear programming problem in which the objective function and constraints can be

expressed as a linear combination of several different one-variable functions, of which some or all are nonlinear, is called a separable programming problem. When objective function and constraints are separable in a Non-Linear Programming Problem, such a problem is known as separable programming. Separable programming, which has the problem of minimizing a Convex objective function in a convex set of points, is called separable convex programming. Non linear data is a data that are accessed and modified by an unauthorized user. Linear data is an original information which were in the pattern that is before accessed by an unauthorized user. Global solutions can then be obtained with any number of efficient linear programming codes. The Convex Separable Programming works when unauthorized user access the database. The alert message is generated when an intruder enters the database. Then the algorithm will disable all the modules and the intruder will not be able to access those modules. This algorithm will initiate its process when the key is miss match. By this the integrity of the data is maintained and the security of the database is improved.

5. Experiment Setup:

The Momentum around data-driven farming is gathering thanks to the use of technology like soil moisture and temperature sensors, drones, livestock monitoring gadgets and crop management devices to produce reams of priceless information. The end goal is to help agricultural businesses make better, more informed decisions, allowing them to tap into a range of advantages. To evaluate our proposed algorithm in a practical scenario, we implement in the concept of agriculture. There are three logins (i.e.) user login, admin login, organization login. In this concept the user is denoted as landlord who is interested in doing forming. The user need to give the details of the land the location and size of the land. These information will be stored in admins database. Based on the location of the land the suitable type of farming will be suggested. The organization will rent the all the product related to forming including machinery, tools for cultivation, chemical and organic products for fertilizer. If landlord wants any of these products then they can buy it for rent by giving necessary information and also the payment related information. Based on the size of the land the number of farmers required will be shown in a graphical representation. If the user have any queries regarding farming then they can send those queries to the organization. The organization members will analyse the queries and will give proper suggestion to the user. The certificate will be generated by the organization for the land if the user request for certificates.
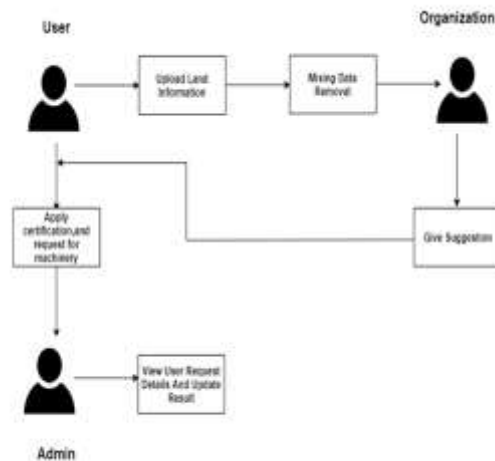

Fig 1: Experiment Setup

6. Data Retrieve and Analysis:

The operations on the data retrieving are performed only by the basis of key, this is delegated to loyal authority. The purpose of Data Analysis is to extract useful information from data and taking the decision based upon the data analysis. A key is only accessible by an administrator for the authorized users. The key generation to access the data by an entity within an organization is to be maintained by the administrator level. The admin view the user uploads and analyze about the land resources like sand, water resources and also analyze which is best to make the harvest of farms by the given land. After that admin will provide all resources to farmer for develop farming. Based on the location given by the user the suitable farming will be suggested by analysing the given information.
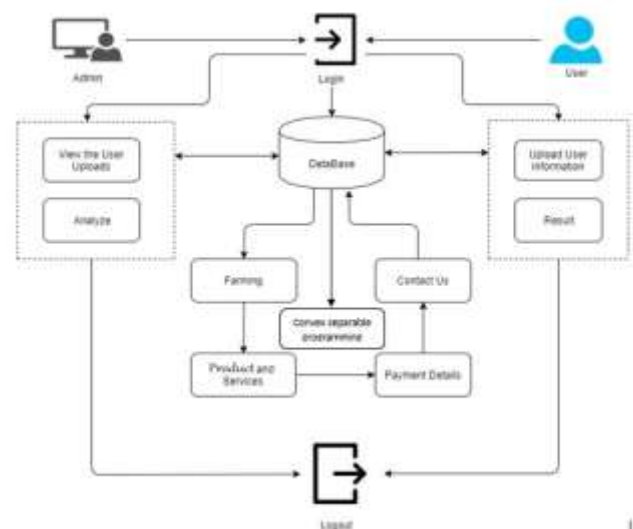

Fig 2: System Architecture

7. Securing the Information:

Information security threats come in many different forms. Some of the most common threats today are software attacks, theft of intellectual property, identity theft, theft of information and information extortion. The theft of intellectual property has also been an extensive issue for many businesses in the information technology field. Identity theft is the attempt to act as someone else usually to obtain that someone's personal information or to take advantage of their access to vital information through social engineering. Theft of information is becoming more prevalent today due to the fact that most devices today are mobile that are prone to theft and have also become far more desirable as the amount of data capacity increases.

The various type of farming information which will be provided based on the geographical location of the land will be secured by the proposed algorithm. If this information is not secured then it will cause an serious impact to the business of both the landlords and the farmers. Security is the set of control-based technologies and policies designed to adhere to regulatory compliance rules and protect the information, data replications and infrastructure associated with the database. Hence by providing the security for these information, the integrity will be maintained and various issues caused by an unauthorized user will be avoided and this processes will also likely to give assurance for the business continuity of the organization.

8. Result:

In this paper, the data integrity and security will be maintained. It is the maintenance and assurance of the accuracy and consistency of data over its entire life cycle. The manual work of the database administrator will be eliminated by using convex separable programming algorithm. By using this algorithm the original data will be secured and the intruder will not be allowed to access or modify the database. This concept is implemented in the field of agriculture to improve the integrity of the data related to the user, farming and transaction details.

9. Conclusion and Future Enhancements:

The promise of Big Data in future is alluring, but the challenges above have to be addressed for increased uptake of Big Data applications. Although there are indeed technical issues to be resolved, we recommend focusing first on the governance issues that were identified and design suitable business models because these are currently the most inhibiting factors. Big Data is changing the scope and organization of farming through a pull-push mechanism. Global issues such as food security and safety, sustainability, and, as a result, efficiency improvement is tried to be addressed by Big Data applications. These issues make that the scope of Big Data applications extends far beyond farming alone, but covers the entire supply chain. In future enhancements, the outsourcing of CSPs can also be done without the client's involvement in the process, making it more convenient for them to handle. It can also be developed more secure than before by implementing complex encryption algorithms in the system. Implementing a sophisticated encryption algorithm improves the security of the system and protects the vast amount of sensitive data from unauthorized access.

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