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Security/Privacy in Health Care Monitoring Using Wireless Sensor Networks

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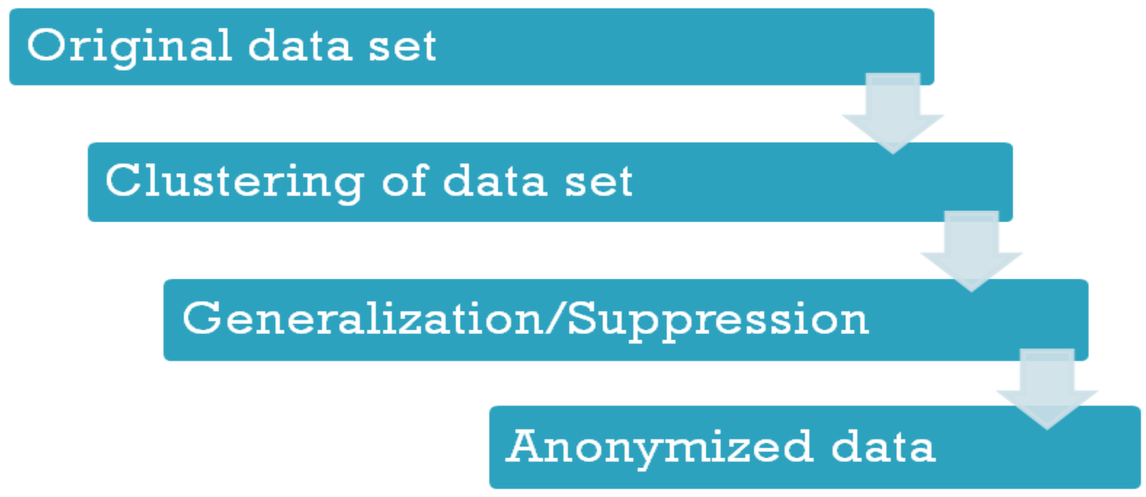
Abstract

Advancements in wireless sensor technology have led to increasing the involvement of Wireless Sensors Network (WSN) in health care domain. This paper analyzes the security issues and finds the possible techniques to minimize the effect of the threats, especially the privacy, on the sensitive patient's data. The data that is transmitted through the cloud is vulnerable to various security attacks. One of the primary security threats is privacy. Data privacy aims at protecting the sensitive information and not revealing this information to the unauthorized entities. This is achieved using anonymization which includes Generalization and Suppression techniques.

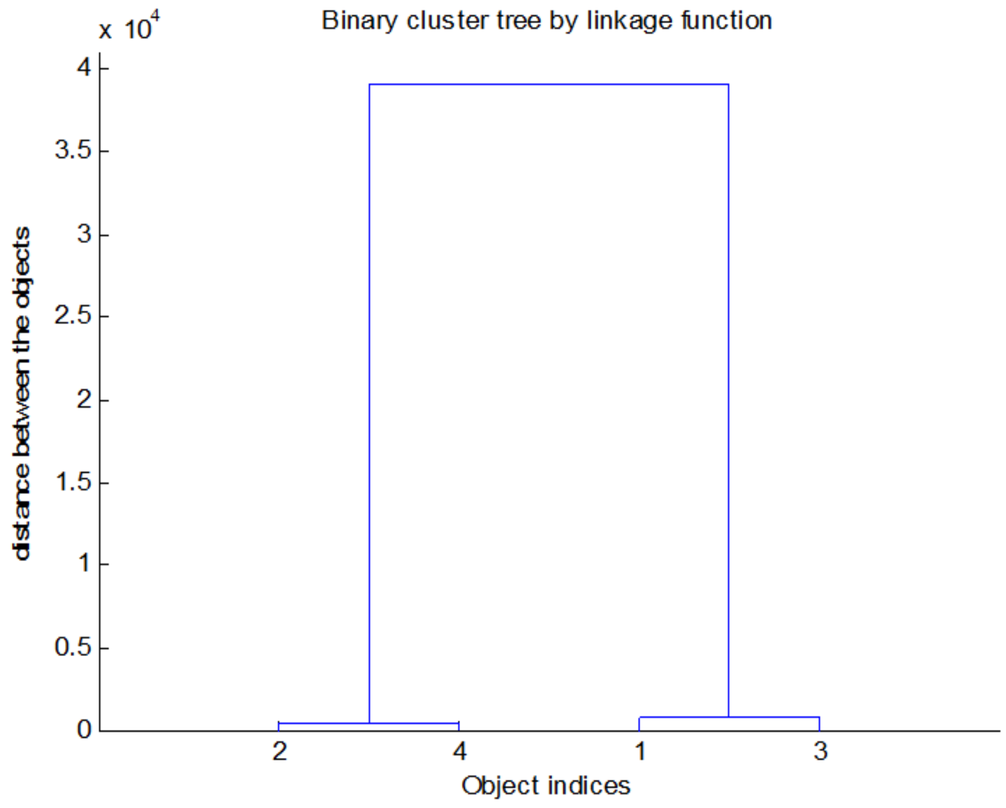
Introduction

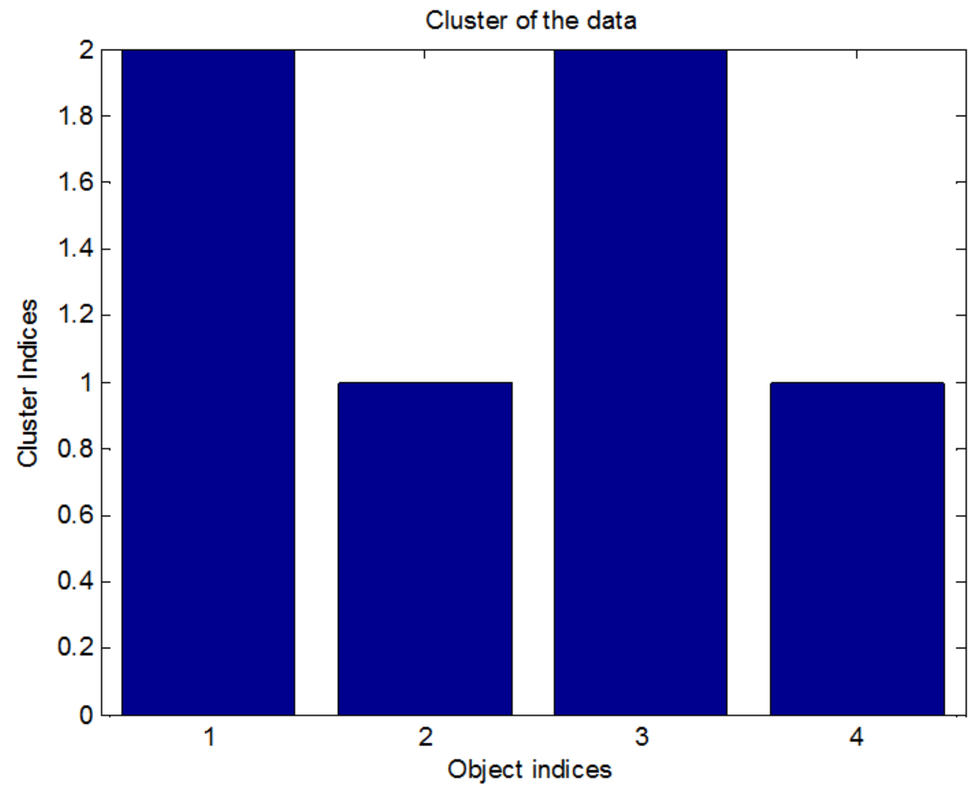
WSN is the interconnection of sensors, which are distributed spatially to monitor the environmental and physical conditions. The data that is transmitted through WSNs must be secured from the unnecessary human activity. To achieve this, we use a technique called anonymization which is a privacy preserving technique which converts the data to make it anonymous, so that it is accessible only to the authorized users. To achieve this goal, the anonymization techniques, namely the Generalization and Suppression are conducted on the large data sets which are clustered using hierarchical clustering.

Methodology



Results





Conclusion

Firstly, to achieve the data anonymization, we implemented clustering to group the data of many patients. Moreover, then, implementation of the techniques of generalization and suppression to obtain the anonymized data. This led to improved results, as we get the results in the form of dendrogram and therefore reduced entropy when used with fewer data sets.

Future Work

The research in future can be a scalable approach on large data sets where the patient's data can be organized in an efficient manner, and the privacy of the sensitive data can also be preserved.

References

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