(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :13/02/2024

(21) Application No.202441009535 A

(43) Publication Date : 08/03/2024

(54) Title of the invention : A SMART HEALTHCARE MONITORING SYSTEM USING CLOUD CENTRIC AUTHENTICATION MODEL

(51) International classification : H04L0009320000, H04L0067100000, G06F0021620000, H04L0009140000, H04W0012128000

(86) International Application No : NA
    Filing Date : NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number : NA
    Filing Date : NA

(62) Divisional to Application Number : NA
    Filing Date : NA

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(57) Abstract :
Security and privacy are the major concerns in cloud computing as users have limited access on the stored data at the remote locations managed by different service providers. These become more challenging especially for the data generated from any organization as it is highly sensitive and heterogeneous in nature. Hence, in this invention, we propose a new cloud-based user authentication scheme for secure authentication of medical data. After successful mutual authentication between a user and any healthcare maintenance system, both establish a secret session key that is used for future secure communications. As the medical data is stored up the cloud, there can be easy access to the data. There can be easy retrieval, updating, deletion, easy mobility etc. The extensively used Real-Or-Random (ROR) model based formal security analysis and the broadly accepted Automated Validation of Internet Security Protocols and Applications (AVISPA) tool based formal security verification show that the proposed scheme provides the session-key security and protects active attacks. The proposed scheme is also informally analyzed to show its resilience against other known attacks. Moreover, we have done a detailed comparative analysis for the communication and computation costs along with security and functionality features which proves its efficiency in comparison to the other existing schemes of its category. The major importance of authentication in cloud computing is for users to ensure their innovation and information are safe and there when they need it. While there are still a few issues associated with cloud service providers being able to perform authentication methods without any challenges or security fears, it is important to remember just how new cloud computing is and the amount of room it has for progress. Now we propose a secret key with mutual authentication from two ends so that the passcode generated is secure with the user.

No. of Pages : 13 No. of Claims : 5