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Child Vaccination System

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Abstract: Since India is a densely populated nation, there is a requirement of a centralized and secure application that would be helpful in tracking the infants as well as their vaccination schedule. In a majority of the developing nations vaccination tracking is done manually using paper which is too cumbersome and at times information about vaccination may be lost. We suggested a java application based solution which will store infant/parent personal information on registration.This information will be stored in database while fingerprint will be stored in blockchain. For verifying schedule or tracking status of vaccine fingerprint will be inserted on device.The primary goal of the proposed system is to monitor vaccination status of infant by using fingerprint. Application will also remind about future vaccine schedule to parents. This will decrease the likelihood of any unvaccinated infant. This system will decrease the drawback of current system where we had paper based system. For making this project we will be using fingerprint device and for storing fingerprint we will be using blockchain which will store information using SHA256 encryption. So this project will be beneficial for parents, Medical Institutions, government. This innovation will ensure monitoring of vaccination progress and also it will ensure that no baby will remain unvaccinated.

Index Terms - SHA256, blockchain,Biometric,fingerprint,vaccination,encryption

INTRODUCTION

Electronic monitoring of children health condition and immunization is one that can be utilized to admit messages regarding the vaccinations that need to be taken. It also warns the stoner regarding a specific outbreak in a specific region. The messages are routed to the specific registered stoner's mobile in the form of SMS. Child Immunization Tracker design is largely completed to provide an appropriate memorial for the stoner to flashback their sprat's vaccines and provide the relevant vaccines to their kiddies on schedule. Besides that, this system also assists in maintaining an streamlined record of the vaccines which are administered to the kiddies of the druggies in a schedule format. Similarly, the advantages of developing Children Immunization Tracker is to remind the stoner to be notified of the upcoming vaccination by sending a reminder through book communication to him/her, whereby they won't forget about the vaccination as well as having a track record of what was administered and what is yet to come. Vaccination is one which is critical for all who exist because vaccination provides impunity and assists in assisting from colorful ailments. Migration between cities, nations, pastoral to civic, tracking the health record is a must so that health care is extended up to such similar people in the form of continuum of care. Immunization of children is one such critical area where we can provide full immunization content to similar community who are often left out.

PROBLEM DEFINITION

The process of immunization for children in India has been an integral component of public health services, but the existing paper-based system for recording vaccination history is fraught with major challenges. These are the loss of data, human errors, and inefficiencies in retrieving and updating information. In developing nations, where resources are scarce, keeping accurate and accessible records of vaccination is even more challenging. To solve these problems, our project seeks to automate the process of keeping immunization

records through the use of biometric technology. This will improve the accuracy, security, and efficiency of monitoring vaccination histories, ensuring timely and appropriate immunizations for children while minimizing the workload.

LITERATURE SURVEY

1. Jeev : A Low-Cost Cell Phone Application for Monitoring the Vaccination Coverage of Children in Rural Areas published in 2013 by IEEE International Conference on

Healthcare Informatics Jeev, a software operation is utilized to monitor the vaccination content of children in pastoral communities. Jeev synergistically marries the potency of smart phones and the ubiquity of cellular structure, QR canons, and public identification cards. They show the design of Jeev and mark its distinctive features together with a first assessment of its performance. They intend to pilot test Jeev in a pastoral population to examine its efficacy and determine socio-artistic concerns that can happen in a largescale rollout. Jeev doesn't employ any biometric information. It's based on a customer- garçon model and employs low cost textbook messaging. Data from various visitors can be paired on the garçon in real-time. They provided an initial assessment of Jeev's performance and energy usage utilizing the National Immunization Survey datasets to demonstrate its capability.

2. Real Time Access to Online Immunization Records and its Effect on Tetanus Immunization The prime concept of this paper was to measure the effect of online access to the state Immunization Information Systems(lIS) on the immunization behaviors of exigency department(ED) providers in a pediatric academic tertiary care center. To improve the content, informatics specialists have proposed the importance of including and permitting outpatient systems for ordering and creating immunizations, two-dimensional barcode technology support for creating, immunization data exchange with a health information exchange or an immunization repository such as GRITS and most importantly, access to immunization soothsaying tools with monuments to improve immunization content of rehabilitated cases. equipping interactive memorials and warnings at POC for physicians to minimize "missed opportunities" to vaccinate, should be explored, weighing any warning fatigue that could be triggered by too many warnings. In addition, models are constructed to accurately forecast online decision support systems such as(lIS), for their mileage and effect to alter short- term and long- term case problems.

3. Immunize - Baby Steps for intelligent healthcare published in 2017 International Conference on Innovations in Green Energy and Healthcare Technologies (IGEHT) They discussed in this paper, a generic system to solve healthcare problem, where a shared platform to store and recover entire child medical history information. It contains mandatory vaccination schedule information of child along with the previous medical history records. monuments to provide timely vaccinations to their child are also given to vigilant parents to provide health protection to their child. Through Web and Mobile rooted technology, parents and croakers obtain access of the medical reports of the child online anywhere and anytime with required boons. This job assists both parents and croakers to provide better quality healthcare services. With java servlet technology, java Garçon runners(JSP) at garçon side and java script, j- query at customer side, web grounded operation is constructed.

4. Mobile Phone and Installation-based Server Technology Utilization in Nigeria's Routine Immunization and Disease Surveillance Activities: Polio Surveillance Strengthening published in 2018 International Conference on Smart Computing and Electronic Enterprise (ICSCEE) The aim of this study is to validate and determine the utilization of mobile phone and installation-based garçon technology in routine immunization and complaint surveillance conditioning in Nigeria. Results were seen to register a considerable improvement over paper-based collection processes and this was achieved within a protected data collation landscape with ideal punctuality, security and quality control. Research concluded that premise-grounded garçon is economically viable in contrast to total pall cost over 5 times. Visualization of the installation of garçon on ground has promised the ability to triangulate dashboards with real-time data on a daily basis follow-up for data from the field that would be veritable in extremity and outbreak reactions. Data coming from the field visualizations is a strong and veritable solution to form more rapid and solid opinions for support of routine immunization and surveillance of polio.

5. Parental Reminder and Planner for Children Vaccination, published in 2019 IEEE 9th International Conference on System Engineering and Technology (ICSET)

Primary intention of this design is to create a simpler method of memorial for the parents to have an online vaccination diary website. Apart from that, it also maintains record of the vaccinations which has already been given and it's simpler to observe the record at any time. The process which is utilized for creating this web-based system is by employing nimble Unified Process(AUP) it includes four phases namely commencement, elaboration, construction and transition. As a consequence of the observation and check there are numerous challenges occur and solution can be made by creating this Maternal memorial and Diary for Children Vaccination. As a conclusion, through the development of this kiddies Vaccination Diary it'll be a good action to assist the parents in tracking their kiddies vaccines and this web based system also has some improvement to be done for the unborn workshop. Apart from that, this design has an new backup in Google Cloud which assists to assist loss of data from the Database.

6. Design and implementation of doctor-patient interaction system based It is purely doctor and patient interaction. Patient needs to describe the medical history by his own. He can take online appointment and can get query answered by doctor.

7. A Fast Interactive Search System for Healthcare Services

System is developed that will save info user login and retrieve all information. If physician wishes to use information still patient must login. Patient must keep in mind his credential. Patient will find hard to remember credential if he is in critical condition.

8.Identity privacy preserving biometric based authentication scheme for Naked healthcare environment Patients would come in direct contact with the environment and would be identified by it. Here in this paper they are proposing the concept of Naked environment in which patients can obtain health services from intelligent and clever surroundings of a hospital without explicitly using gadgets. This utilizes Eye retina which would be very expensive.

9. Realization of a Universal Patient Identifier for Electronic Medical Records using Biometric Technology

This paper suggest to implement biometric technology in our fingerprint, iris, retina scan, and DNA (FIRD) model, which is multiphase system whose key phase is a multilayer that includes these four forms of biometric identifiers: 1) fingerprint; 2) iris; 3) retina scan; and 4) DNA. This paper is not yet implemented iy have discuss benefits of various type of biometric.

10. Authentication Protocol for Real-Time Wearable Medical Sensor Networks Based on Biometrics and Continuous Monitoring

It enables the doctor/nurse to log in into the system using his/her fingerprint and authenticates patient identity through continuous monitoring of physiological signals (e.g., ECG signal) in which the patient identity is automatically verified and at a fixed interval of time to monitor physical theft of the sensor, which can be clipped on a different patient.

Sr.No.	Title of Paper	Year	Methodology	Limitation	Key Finding	Dataset
1	A Traceable Blockchain-Based Vaccination Record Storage and Sharing System	2022	A traceable blockchain-based vaccination record storage and sharing system	For High security and to identify person,Biometric is not used.	The proposed system has resistance to replay and man-in-the-middle attacks, and the performance is good	NA
1.	Development of an Internet-of- Healthcare System using Blockchain	2021	Mobile devices can download there own personal information using blockchain and AWS	This application is developed for mobile and can only be used in android application. Accuracy of project is 70%.	A system design that stores and secures data in the cloud using a blockchain technique and manages the identity of users through multimodal biometrics.	NA
2.	Design and implementation of doctor-patient interaction system based	2021	In this paper they have presented a doctor-patient interaction	This is only a chat application between doctor and patient.	It is only doctor and patient interaction. Patient has to tell about the medical history by his own.	NA

			system based on Android.			
3.	A Biometric Approach for Electronic Healthcare Database System using SAML - A Touchfree Technology	2021	To provide Covid patient instant support for availability of necessary control through biometric	We can use this system only for one disease ie.Covid-19	Security Alert Covid Patients Control Over Mobile Applications.	WISDM Smartphone and Smartwatch Activity and Biometrics Dataset
4.	Evaluation of Electrocardiogram Biometric Verification Models Based on Short Enrollment Time on Medical and Wearable Recorders	2021	In this propose system a pipeline for ECG authentication with limited data required for competitive usage across applications	Biometric verification is done only for heart not for full body.	two public datasets collected from wearable and medical devices and propose a pipeline for ECG authentication	Two public datasets collected from wearable and medical devices using UCI repository
5.	An Investigation of Biometric Authentication in the Healthcare Environment	2020	Eye,Fingerprint as biometric authentication comparison is given.	Software to capture the periocular data is not developed.They have used dataset which have accuracy around 70%	Patient's enterprise master patient index (EMPI), which is a unique identifier used in the healthcare information system to identify every patient.	ufpr-periocular Kaggle dataset https://www.kaggle.com/datasets/ruchi798/periocular

						- detection
6.	Biometric Authentication in Health Care Sector: A Survey	2019	we review different physical and behavioral biometric techniques that described in a different research paper in past decades;	The minutiae-based algorithm worked effectively only in 8-bit gray scale fingerprint images.	Health care sector, healthcare system, in-patient consideration	Fingerprint recognition https://www.kaggle.com/code/kairess/fingerprint-recognition
7.	Implementing a medical record system with biometrics authentication in E-health	2017	To develop a hospital information management system with fingerprint biometrics for authentication	Privacy and security of patients are concern as information is not encrypted.	Hospital information management system with fingerprint biometrics for authentication.	Sokoto Coventry Fingerprint Dataset https://www.kaggle.com/datasets/ruizgara/sokofing

ARCHITECTURE DIAGRAM

This project is to execute algorithms which would be utilized to send email to the registered parents/users. First, the input data is obtained from the biometrics of the parents and the first vaccination is administered after the registration when the child is born.

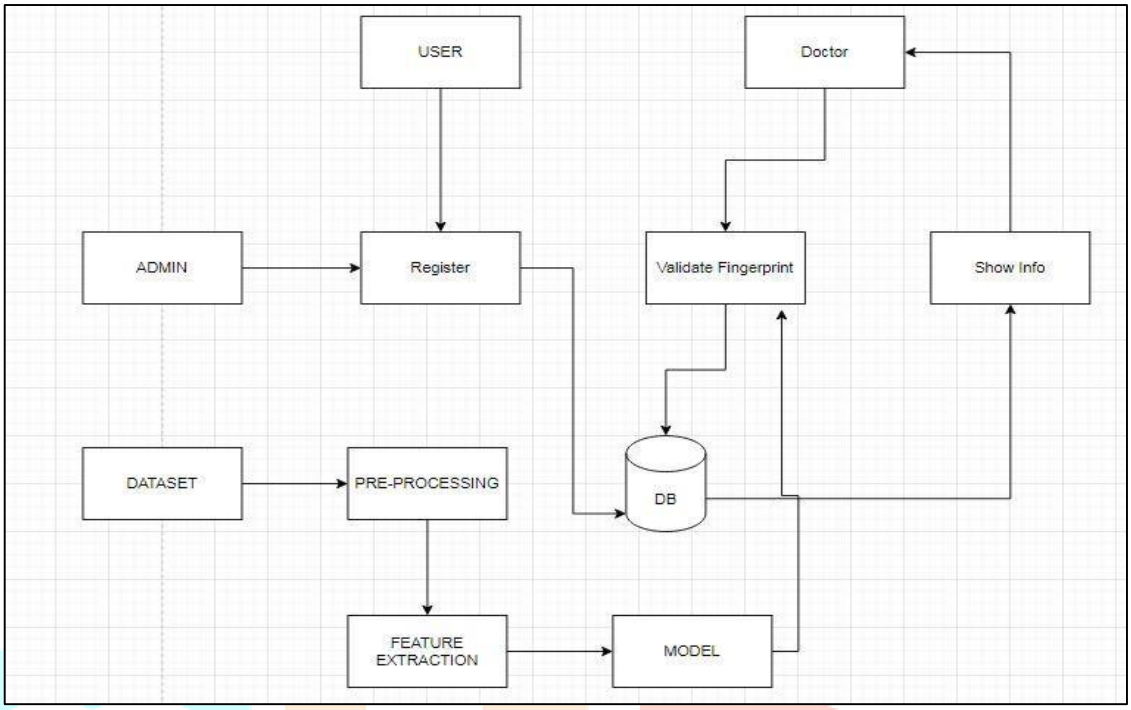

Fig 1. Architecture Diagram

CONCLUSION

Vaccination is one that is necessary for all because vaccination provides immunity and prevents from all kinds of diseases. Migration from city to city, state to state, rural to urban, it is necessary to monitor the health record so that health services reach up to such individuals in the form of continuum of care. This Child Vaccine Tracker is undertaken to mainly serve as an effective reminder for the parents to recall their child's vaccination. The system also maintains the record of vaccination for each child enrolled and reminds the parents for future vaccines through email messages

REFERENCE

[1] S. Bharadwaj, H. S. Bhatt, R. Singh, M. Vatsa and S. K. Singh, "Face recognition for newborns: A preliminary study," 2010 Fourth IEEE International Conference on Biometrics: Theory, Applications and Systems (BTAS), Washington, DC, USA, 2010, pp. 1-6, doi: 10.1109/BTAS.2010.5634500. keywords: {Pediatrics;Face recognition;Face;Feature extraction;Databases;Pixel;Accuracy},

[2] C. Gottschlich, T. Hotz, R. Lorenz, S. Bernhardt, M. Hantschel and A. Munk, "Modeling the Growth of Fingerprints Improves Matching for Adolescents," in IEEE Transactions on Information Forensics and Security, vol. 6, no. 3, pp. 1165-1169, Sept. 2011, doi: 10.1109/TIFS.2011.2143406.

[3] keywords: {Size measurement;Shape;Bones;Correlation;Indexes;Fingers;Automated fingerprint identification systems (AFIS);biometrics;finger growth;fingerprint recognition;matching;shape analysis},

[4] J. Kotzerke, S. Davis, K. Horadam and J. McVernon, "Newborn and infant footprint crease pattern extraction," 2013 IEEE International Conference on Image Processing, Melbourne, VIC, Australia, 2013,

pp. 4181-4185, doi: 10.1109/ICIP.2013.6738861. keywords: {Biometrics;crease pattern extraction;infant footprint},

[5] R. P. Lemes, O. R. P. Bellon, L. Silva and A. K. Jain, "Biometric recognition of newborns: Identification using palmprints," 2011 International Joint Conference on Biometrics (IJCB), Washington, DC, USA, 2011, pp. 1-6, doi: 10.1109/IJCB.2011.6117475. keywords: {Foot;Annealing;Noise measurement},

[6] S. Balameenakshi and S. Sumathi, "Biometric recognition of newborns: Identification using footprints," 2013 IEEE Conference on Information & Communication Technologies, Thuckalay, India, 2013, pp. 496-501, doi: 10.1109/CICT.2013.6558146. keywords: {Pediatrics;Foot;Feature extraction;Databases;Pattern matching;Training;Hospitals;Biometrics;Footprint;Newborn;Online},

[7] P. Basak, S. De, M. Agarwal, A. Malhotra, M. Vatsa and R. Singh, "Multimodal biometric recognition for toddlers and pre-school children," 2017 IEEE International Joint Conference on Biometrics (IJCB), Denver, CO, USA, 2017, pp. 627-633, doi: 10.1109/BTAS.2017.8272750.keywords: {Face;Databases;Iris recognition;Pediatrics;Probes;Fingerprint recognition;Biomedical imaging},

[8] M. Brooks, C. R. Aragon and O. V. Komogortsev, "Perceptions of interfaces for eye movement biometrics," 2013 International Conference on Biometrics (ICB), Madrid, Spain, 2013, pp. 1-8, doi: 10.1109/ICB.2013.6613018. keywords: {Authentication;Prototypes;Usability;Calibration;Iris recognition},

[9] S. J. Elliott, S. A. Massie and M. J. Sutton, "The Perception of Biometric Technology: A Survey," 2007 IEEE Workshop on Automatic Identification Advanced Technologies, Alghero, Italy, 2007, pp. 259-264, doi: 10.1109/AUTOID.2007.380630. keywords: {Biometrics;Educational institutions;Iris;Airports;Laboratories;Safety devices;Retina;Law enforcement;Tellurium;Sun;biometrics},

[10] K. Krol, S. Parkin and M. A. Sasse, ""I don't like putting my face on the Internet!": An acceptance study of face biometrics as a CAPTCHA replacement," 2016 IEEE International Conference on Identity, Security and Behavior Analysis (ISBA), Sendai, Japan, 2016, pp. 1-7, doi: 10.1109/ISBA.2016.7477235. keywords: {Face;Biometrics (access control);CAPTCHAs;Usability;Security;Interviews;Context},

[11] E. Kukula and S. Elliott, "Implementation of hand geometry: an analysis of user perspectives and system performance," in IEEE Aerospace and Electronic Systems Magazine, vol. 21, no. 3, pp. 3-9, March 2006, doi: 10.1109/MAES.2006.1624184.

[12] keywords: {Performance analysis;System performance;Biometrics;Access control;System testing;Information geometry;Environmental management;Privacy;Statistical analysis;Control systems},

[13] O. T. Olubukola and B. J. Atinuke, "Development of a Recognition Algorithm for Newborn and Infant Fingerprints," 2017 International Conference on Computational Science and Computational Intelligence (CSCI), Las Vegas, NV, USA, 2017, pp. 1815-1817, doi: 10.1109/CSCI.2017.324. keywords: {digital identity;fingerprint;newborn;infant},