

Identification of newborn abandoned babies, criminals of rape cases & unknown dead bodies, using bioinformatics.

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Abstract - Every year newborn babies get abandoned by parents and to find those parents, a police investigation is also done but not 100 percent of all parents are found. Similarly, to find the criminals in rape cases and to identify the unknown dead bodies So with the help of bioinformatics and collecting Iris biometrics, footprints, fingerprint, and DNA sample we can find the culprit easily. Even when an accident occurs and if the patient goes under unconscious condition for that period due to this technology, we can find the medical history of that patient and we can proceed with his further treatment.

Key Words: Bioinformatics, Iris scanner, footprints, DNA sequencing, biological & genomic data.

1. INTRODUCTION

Innovation in technology in the past few years has made great advancements in progress inheritable basis of physical composition. Bioinformatics has been perceived in biological science with the latest technology and advancement, giving a large amount of omics information. It is an integrative field that evolves new techniques and operating system tools to recognize the biological information in the period when the data are big and composite. It encompasses the biological studies that use computer programming for the methods and techniques. The falcate and this data which is available in the local database management are a big face coming challenge for the experts from the different fields. The use of this technology covers the recognition of applicant genes and single nucleotide polymorphism. The use of bioinformatics Technology plays an important role in forensic labs for the investigation of DNA samples and genomic data. Crime Investigation also helps to investigate the criminal earlier and accurately with the data which is stored in the database system. Its plays and main role in the identification of the genes and fibrin expression and regulation. In bioinformatics, the main task is to make use of the amount of data and structural information and the chronological data that have been produced at various levels of the biotic system (Posner, 2015). In bioinformatics, the progress of the tools is required computerized and statistical capacity of assisting in knowing the mechanism which is lying under the biotic queries in the research. Therefore, we consider the difficulty of science this is greatly reduced. It tries to recognize the bureaucratic principles within nucleic acid and protein succession known as proteomics.

Progress of comprehension in the field is essential for the instinctive technique for biotic researchers two rapidly and easily range over the existing information to recognize the information set and report the relevance to the field of attentiveness and to find the main data within those data sets. The advantage and requirement of range over base techniques worked for a small array of information on the much portable scale of few data sets. It can be rapidly calculated across the sequence of many data sets the biotic precision is greatly reduced when taken over diverse circumstances. The congregate is best-restricted beginning analytics of one data set. The most fundamental expression of assembling for the collection of any subset of conditions. Some views obtained quick running Times by restricting the types of bi-cluster they can find and targeting specific types of information such as time courses (Madeira & Oliveira, 2005). And an expression of assembling feature selection on technique approach may find a clamorous pattern among irrelevant states. It requires a lengthy computing period for a complete survey. To overcome all of these small problems we derived more ascendable circumstances of specific search methods. To authorize biology researchers to range over very big microarray compilation in a biologically meaningful manner. Based on this compendium of data with demonstrate the usefulness of our thinking for information exploration and hypothesis formulation.

Assuming and signal processing let the removal of functional consequences from a big amount of Underdone information. Pasture genetics helps in order and glass genomes and their identified mutation. Bioinformatics is derived as the use of tools of computational data to view the capture and interpretation of biotic information. It is a field that tackles Physics Biology mathematics and computer science. At a more centralization level, it assists, examines, and classifies the biological trackways and networks that are the main part of system biology, it helps in cloning and modeling RNA, DNA protein acids as well as biomolecular interplay.



Figure: 1

2. History of Bioinformatics

Previously the method of bioinformatics doesn't mean today's Technology. Ben Hesper & Paulien Hogeweg derived in 1970 to overall learn the process of the biology system and to study the data. This defines the place bioinformatics as a parallel field to biochemistry (The study of chemical processes in biological systems). In Bioinformatics the information is used to collect and organize the data chronologically.

3. Theory

Biometric technology is already changing the world in which we live. However, misconceptions and misinformation regarding privacy breaches, accuracy levels, and security risks are hampering the widespread adoption of biometrics around the world. In this research, we are focusing on the secure storage of biometric data and we are also going to look at some of the common myths associated with the secure storage of biometric data, the accuracy levels, and the cost of adopting biometric authentication technology. In India, the most accidental death and crime rate are increasing day by day. Many accidental death bodies death causes by natural disasters rape cases etc. To find the suspect or to identify the particular person's medical history like allergies to the tablet allergies from the bond period or two identify the blood group. Bioinformatics is used to match the genomic data of the person for the medical records which are stored in the database. By testing and matching the DNA of hair nails or any other skin parts it will be easier to find the culprit records easily because we will Store each person's unique identification data in the database. This database will be created by using the genetic code of the person's data. It will be easier to maintain the records of the data, this data can be accessed through various government hospitals and are stored in computerized on a digitalized manner through fingerprint eye scanner thumbprint, etc. it will be also used in the forensic lapse for the post-mortem of the body. In India, most accidental death cases are increasing day by day. According to the statistical data, a federal study found that 22000 babies are left in hospitals by parents for certain reasons, and every day 426 die in road accidents 18 per hour. Rape is the most common crime in India according to the 2021 annual report of NCRB in which 31677 rape cases the register in the year 2019, 2602 dead bodies were found among 278 identified, 25 murder cases were launched and the crime was the same in the next year. To overcome this problem and to find the particular person's history and other culprit identification the bio information will help to match the data of the person which is stored in the database. Due to this, we will get the accurate data of the person who will proceed with the work more precisely early implementation of this database will be done through a unique ID Aadhar card to which this database of DNA will be attached this can be done in two ways.

1) for new-born babies which day do not have their Aadhar Card unique ID their data will be collected when they are born in the hospitals and will be stored in the parent's unique ID database till the unique ID of new-born babies is not created.

2) the rest of the population in India will have to update the Aadhar cards for this database attachment, in case of a certain case of an accident a random will be hospitalized in a private hospital then they have to take the health of the government hospitals for the database.

This idea will help to maintain the records of the data accurately and we are researching implementing this data digitally computerized.

4. Used technologies

Iris Scanner:

It studies the iris and admittance card in one machine. An Iris scanner is a trustable identity verification system that scans the iris of any person's eye it is the most rapid and trustable mode of person verification as it is the requirement of recollecting the passwords and user identification name. iris scan and fingerprint dual is quite a better way to make confirm that no one can cheat with the system. It is a rapid way of identifying someone on the location if ever needed and it is not easy to find an escape clause to like this cast fingerprints and using bifocal since a day can be checked smoothly and sometimes it is even checked by the software full stop in India Aadhar card is compulsory to every citizen. The Iris scanner is on standby and I through the people location and iris itself are focused on. The development is digitally cleared of voice and converted into a rectangular pattern an iris code, containing data about the object's unique features and characteristics in black and white (like a QR code). Then this code is compared with the database which is stored templates. At the same period, the expedite is very high, making it easy to use the database at a very large scale. It is one of the safer technologies for personal identification which is in demand for the capacity of the iris for use in contact lens scenario identification combined with a facial picture and a biometric identifier. So if in future any crime or accidental case occurs and if the eyes are found in CCTV then we can access Aadhar details which are stored in the database. By doing this we can make India a crimeless country.



Figure 2: Iris scanner

- ❖ Working of Iris scanner: The Iris method must be verified to pass such a biometric scanning, allowing a verification response the Iris scanning is done in two stages.

Step 1: Taking a click short of an eye . The verification system needs to recognize a person with a click short of his Iris. to propose this scenario each individual must go through one-time verification of their eyes. In this instance the photographing recognition it's done under very standard quality lightning and discrete crimson. This infrared light helps to identify the unique method of brightening eyes more precisely which is more difficult to do in normal light. This I did to computer analysis which detaches information such as eyelashes and focuses on about 240 characteristics in the IRIS pattern. After this, all data which is found by the Iris scanner are converted into easy numeric data consisting of 512 digits (Iris code), which is stored in the computer with the name and other information stored in the database.

Step 2: verification of the authenticity of the eye Once the Iris image is stored in the database the verification procedure will be easy to handle. The system rapidly analyses the resulting picture matching the Iris code from the database. The comparing procedure will start from hundreds, thousands of lacks, or millions of Iris codes that are present in the database the individual is verified positively. this data is stored in the database where the Iris scanner collects approximately 240 biometric features, the combination of which are unique to every Iris. The scanner will create an automated rendition of information full stop the numeric radiation of data taken from the Iris picture which is stored in the database.

UIDAI requires only the verified devices used by authentication eco partners to fully stop this device with the Aadhar system for key encrypted management which rectifies the person's identity and validate this device. Every physical sensor has unique verification allowing device verification from traceability, fraud, etc. Each record is passed within the safe zone eliminating transmission of encrypted fingerprints from the sensor to the host device.

b) Fingerprint Scanner:

In 1900 Sir Edward Henry of England use fingerprints for criminal investigation which was compared slowly by hand. This process is underdone from the crime scenario and another biometric from the suspect which is compared under the magnifying scope. but biometric fingerprints taken sometimes look quite different because smudging fingerprints from the crime scene to compare and proof needs more accuracy and great skills. That's why the forensic researcher produced an easy system for matching the biometrics where they look between 8 and 16 distinct characteristics.



Figure 3: Fingerprint Scanner

❖ Working of a Fingerprint scanner:

There are three main types of finger scanners, optical scanners, capacitive scanners, and ultrasonic Scanner.

- **Optical scanner:** Optical fingerprint scanners are elderly who came by capturing fingerprints and compare them. It is captured in a picture and a unique algorithm is used to verify patterns on the fingerprint surface to make ridges and lines. These sensors are designed for a scanner that approximately captures the depthless image. It hires progress optical automation to capture the format and ridges in dried and moist fingers through Suprema Real scan G10 portable scanner.

Step 1: When the fingerprints are checked digitally there will be no person matching the fingerprints with a magnifying glass. It is done possibly by registration and verification of each image print which is verified very precisely called minutiae, where the lines in a biometric split in 2. The distance and angles are measured by the computer between characteristics like drawing a line and using an algorithm (mathematical procedure) to turn the data into a numeric code. Comparing biometrics is a simple way of comparing their codes if the prince match and the person gains access.

Step 2: Process work with an optical scanner.

A line of LED scans dark light onto a glass or plastic on which the fingerprint is platen. the classification of the image will change according to how it is platen how clean or Greasy the fingers are full stop reflected light comes back through the plastic surface onto a CCD or CMOS picture sensor. The brighter image is visible in how long the image is captured. If the image is too bright the lines of the fingerprints including important information will wash quickly and if it is too that the image will occur black and the information will not be able to see for the opposite cause.

Whether the image is too dark or bright it is checked by the algorithm, an audible beep or indication of LED alerts the user. If the picture is roughly visible or acceptable then another check the level of the data algorithm by counting the number of elevation alternate opposite to each other. By image passing this to sets, the scanner will indicate that the image is clear to the user (by beeping). It is told in a flash memory which is ready to transfer (by wireless, Bluetooth, USB, or any connectivity wire) to host a device where it further proceeds. The images clicked by the way are 512*512 pixels with standard image 2.5 CM, 500 dots per inch, and 256 grey shades. The computer stores the image on a database or digitally match one or many fingerprint biometrics to find the match.

- Capacitive Scanner

This technology assembles many small capacitor circuits which are mainly found in the scanner to collect transforming information about fingerprints. capacitor reserve the charge and they're conducted to the managing plate on the surface to crack the fingerprint information. The changes are located using an OP-amp nonsegregated which is later converted using an analog to digital converter. For higher-quality images, more capacitors should be connected. This information can be saved for later comparisons.

- Ultrasonic scanner

This is the advanced technology that is used in fingerprint scanner full stop the hardware used in scanners consist of an accelerated carrier and a receiver. An ultrasonic pulse is transmitted against the finger placed on the panel scanner. Where some are so cup and rest reverberate back. This depends on the ridges, lines, pores, and other marks found on the finger. This is different for every finger. The automated pressure measured by a sensor is used to count the intensity of the review ultrasonic pulse. This happens at different locations on the scanner. If the period of examination is longer, the depth of information that is captured is more and authorized a 3D rendering of the surface.

c) Footprint Scanner

Footprint Identification Technique (FIT) With advanced technology, fingerprint scanner helps to verify people on their unique fingerprints. Where the footprint scanner is very useful for the identification of infants. we can't take a sample of a newborn baby's fingerprint because till the age of 12 the fingerprint ridges vary and the palm has also closed the baby, so it is not possible to take an accurate palm print through the scanner. So we are going to take the footprints to identify and verify the abundant baby with their parents. if they are left or abandoned then it is useful to match this footprint which is stored in the parent's Database because that baby's id isn't available. Babies' footprint is unique and computerized scanning of footprints can be useful to verify the child in the event there is an incident. We are going to footprint scanner as same as a fingerprint scanner.



Figure 4: Footprint scanner

d) DNA sequencing:

It is the advanced technology used for the DNA match of the parent-child. It is the process in which the nucleic acid sequence (nucleotide) is in a DNA molecule. It is used to study the type of genetic data which is carried in DNA. In DNA sequence the four chemical basis always connect with the same pair of 'base pair'. Adenine (A) always pairs with Thymine(T); Guanine(G) always pairs with cytosine(C). The DNA molecules are copied when the cells get separated in which the human genome consists of three billion base pairs.

This DNA sequence is done by using starORF, first, the DNA sequence is transferred into RNA and then translated into all opening reading frames (orf) encoded within every 6 translation frames. It includes the order of 4 bases; adenine, guanine, cytosine, and Thymine. The DNA sequencing data is stored in old computing in dual digits (1s \$ 0s). In DNA the data is collected and stored in four nucleotide bases which are (A, C, G, T) where they are stored and encoded the data. The genome has to be

sequenced systematically, assembled, and annotated. The data is stored in 215 petabytes in a single gram of DNA, and the system stores every bit of data in the database.

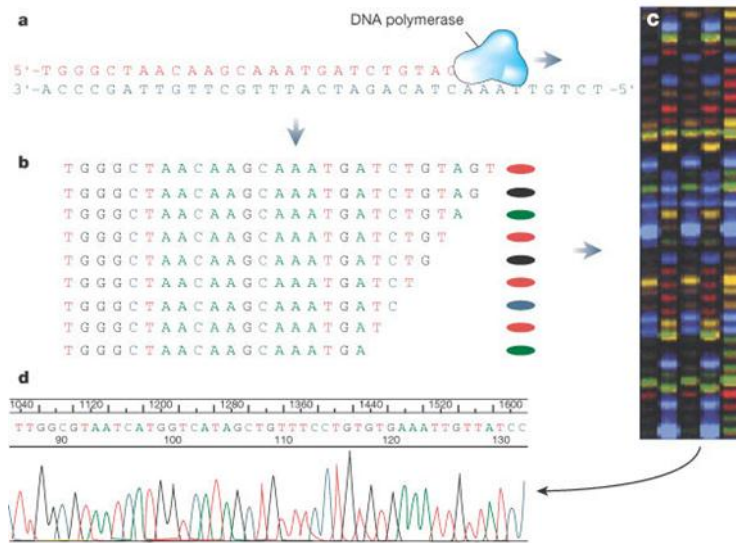


Figure 5: DNA Sequencing sample

5. Scope of Bioinformatics:

1. It is used in gene analysis.
2. It is used in evolutionary scrutinization.
3. It is used in the prophecy of protein formation.
4. It is used for the repository & reclamation of data.
5. To find out the person's evolutionary history.
6. It is used for the annotation of DNA & amino acid sequences.
7. It is used for the identification of criminals and forensics.
8. It is making use of open access to Forensic DNA databases such as the genome/exome Aggregation Databases and ExAC.

6. Advantages

1. It brings a new change in the existing process.
2. It has huge data privacy.
3. The data can be stored and updated easily.
4. To reduce the crime rate in India.
5. To maintain the records of biological data accurately and to implement this data digitally computerized.

7. Future scope

1. To find the suspect or to identify the particular person's medical history.
2. To find easily the parents of abandoned babies.

3. To find the medical history of a person.
4. To identify blood groups easily.
5. To identify unknown dead bodies.
6. We can access biological data and medical history through various government hospitals.
7. To reduce the long process of the police investigation.
8. To find criminals in rape cases by using bioinformatics.
9. To find the abandoned baby's parents' history.
10. To identify the accidental dead bodies.

8. Conclusion:

Bioinformatics is useful to reduce the crime rate in India. In today's period, the police investigation process requires a long time, but with this technology, we can investigate the case quickly. Also, the abandoned babies whose parents' identification is difficult but due to bioinformatics, we can find their parents. In forensic labs, it is very useful to store and match the data. If any accident case happens then various tests have to be done or if any dead body is found then identifying that body is very difficult but due to bioinformatics, all the medical history of the particular person will be stored only, so it will become easy to identify and to match the data. It is used to match the genomic data of the person for the medical records which are stored in the database. This new methodology is lifelong and very useful in hospitals, police investigations, forensic labs, and various medical fields.

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