

Smart Memory Storage in DNA

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Abstract:- Digital production, transmission and storage have revolutionized how we access and use information but have also made archiving an increasingly complex task that requires active, continuing maintenance of digital media. The digital media such as cameras, internet, phones, sensors, File, Document will be all data stored in DNA. We have developed a software called smart DNA which makes it easy to store the data on the DNA. In this work, we present detailed description of the software. "A coin sized device could store the entire information as the one mobile phone or pc all data "the analyzed data from the research reveals that just 2 gram of DNA can store all the information that the mobile phone include internet can produce in a year. This project to overcome the previous paper problem so first limited storage space and more security used to be stored all data. We create software in smart DNA that used to store the all type of file store and retrieve the data. Then followed by types of file list out the

- a) Audio file and video file
- b) Text file and document file
- c) Image file

This are all file will be saving to your mobile or pc in smart DNA. We are using password in more security, and each file or all file one password used. The password used to retrieve the file.

Keywords: DNA, DOT, DNA Storage, Smart DNA.

I.INTRODUCTION

Digital data generation is increasing exponentially, and estimates suggest that the amount of new data being generated each year has already surpassed the data storage capacity of current technologies. [1].The demand for data storage devices is increasing day by day as more and more data is generated every single day.

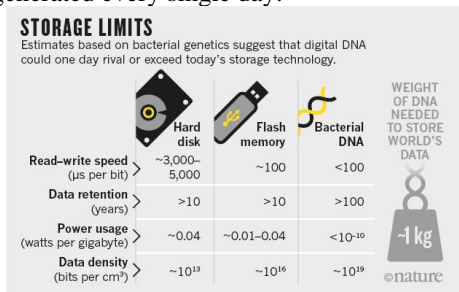


Figure 1

Presently devices such as optical discs, portable hard drives, Pen drives and flash drives are used to store data. [3].But silicon and the other non-biodegradable materials used in data storage pollute the environment vigorously. Also they are available in limited quantities. Thus, they would be exhausted one certain day. One of the most

common causes of data loss is accidental deletion of files without any backup. [4].Every day many people lose their important data because of deleting files accidentally, because they do not have proper backup system. Poor handling of the optical disk can cause data loss in them. Data loss can happen due to damage to the hard drive. [5]. There are many ways to backup the data. One can use cloud services to store data. But to access data which is stored in a remote cloud, an internet connection. It is not possible to access the data which is stored in the cloud. Another way is to store data on an external drive. But external drives are prone data loss too. These problems will be recovered to using the DNA. DNA is very robust material and it has a long shelf life. The information stored in DNA can recovered even after thousands of years. As long as the DNA is stored in dry, dark and cold conditions. DNA can be stored for a long time. DNA can be used for long-term storage. Due to high density, the DNA can store a large amount of data in very small space. DNA requires no maintenance and can be stored without electricity in cold and dark place. One of the venture to use the DNA as artistic material and convert the graphic image to the language of the genetic code was initiated by Joe Davis in the work microvenus.

DNA

DNA for (DeoxyriboNucleic Acid), is the molecule that contains the genetic code of organisms.DNA is in each cell in the organism and tells cells what proteins to make.

DNA digital data storage is the process of encoding and decoding binary data to and from synthesized strands of DNA. [2].One gram of DNA can potentially hold up to 455 Exabyte of data, according to the new scientist .for reference: There are one billion gigabytes in an Exabyte, and 1,000 Exabyte in a Zettabyte.

DNA STORAGE SYSTEM

DNA is made up of four base components: Adenine, Guanine, Cytosine and Thymine (known as AGCT). We imagine DNA digital data storage as the last level of a deep storing hierarchy, giving very dense and durable storage with access times of many hours to days. DNA synthesis and sequencing can be made arbitrarily parallel, making the necessary read and write bandwidths available. We now detail our proposal of a system for DNA based storage with random access support. two values available with binary data (one or zero),each base position in DNA can take one of four values (A,G,C,T, representing the chemical name of the base),so each base is essentially the information equivalent of two bits.

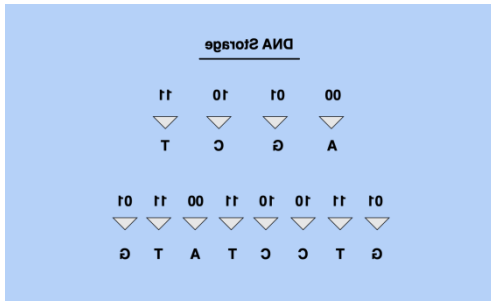


Figure 2

DNA data Storage technology a reality, there are three major physical components:

1. DNA writing/ DNA storage
2. DNA retrieval
3. DNA reading.

WHAT IS SOFTWARE SMART DNA

We have created as software in smart DNA. This software purpose in storage of data in your mobile or pc stored DNA. Its type of file stored to the DNA. Types of file followed by

- i. Document file
- ii. Text file
- iii. Video file
- iv. Audio file
- v. Image file

This software more security provide in the password used. that password in each file or whole file you give one password used. Password constraints followed by You have using the character and number then using special character (*,&,%,\$,#,@,!,?,>,<,_+,;,{,}|,;,’,’) to be stored in one file or all file choose file to stored. You retrieve the file in same password used. any other format not got the file.

II. EXISTING SYSTEM

There are many ways to backup the data. One can use cloud services to store data. But to access data which is stored in a remote cloud, an internet connection. it is not possible to access the data which is stored in the cloud. Another way is to store data on an external drive. But external drives are prone data loss too. There are many security problem occurs. Poor handling of the optical disk can cause data loss in them. Data loss can happen due to damage to the hard drive. Some limitation used to storing the data.

DRAWBACKES THE SYSTEM

The main drawback of their method was that it had high error rate. Then data transformation and storage file in same file name and used error occur. The internet using storage space not safe in any error or device problem so loss data. Now days more number of data in remove or error to deleted data does not retrieve the data.

III. PROPOSED SYSTEM

This project many problems solved in data loss and limited space storage. The digital media such as cameras, internet, phones, sensors, File, Document will be all data stored in DNA. We have developed as software called smart DNA which makes it easy to store the data on the DNA. In this work, we present detailed description of the software. “A

coin sized device could store the entire information as the one mobile phone or pc all data “the analyzed data from the research reveals that just 2 gram of DNA can store all the information that the mobile phone include internet can produce in a year. This project to overcome the previous paper problem so first limited storage space and more security used to be stored all data. We create software in smart DNA that used to store the all type of file store and retrieve the data. Then followed by types of file list out the

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A.SOFTWARE DNA WORK

User chooses the original file to store the DNA format. In any format in example (Pdf, text file etc) to choose original file. Then encoding the file in DNA format. Next step protection to the file so user will put create a password. user can retrieve the file. User can save some more file. the saved file user can enter the password then checked to the password and open the particular file.

B.ENCODING

The first encoding the file. Encoding format followed by in binary format will be convert DNA format. then example followed by

Binary To DNA Table

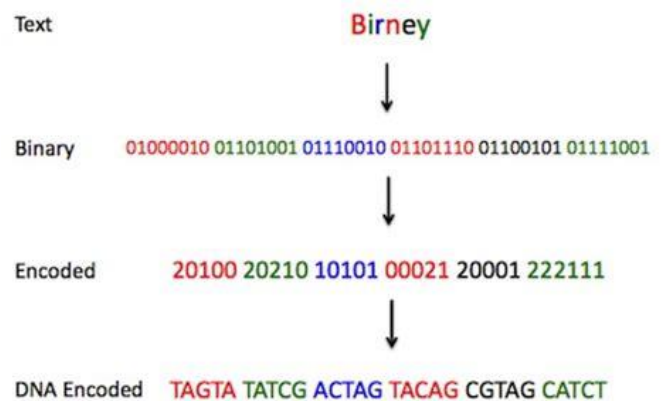


Figure 3

C. PROCESS THE PASSWORD

We have provided the more security, so password used to protection all file. Processing the password followed by user must use the special character in password for example (%,\$,#,@,!). other wise use number or character to set the password. There are stored the file and retrieve the same format.

D.DECODING

The users retrieve the file. then first step is entering the password in particular file. Do check the password correct or wrong is the correct only open the file and otherwise not open the file. then file convert the DNA format to binary format. In followed by the processing decoding

DNA TO BINARY TABLE

DNA letter	Binary Representation
A	00
C	01
G	10
T	11

Figure 4

E.ADVANTAGES OF PROPOSED SYSTEM

This project is to overcome the previous paper problem so first limited storage space and more security used to be stored all data. Then high security provide because unique password used. Lot of data stored in DNA. DNA Format storage in reduce the size of data.

IV.DNA STORAGE

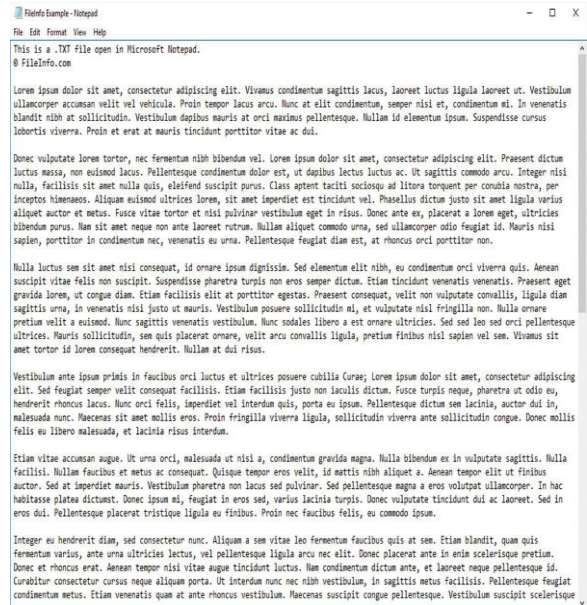
DNA digital data storage is the process of encoding and decoding binary data to and from synthesized strands of DNA. While DNA as a storage medium has enormous potential because of its high storage density. The concept of DNA of Things (DOT) was introduced in 2019 by a team of researchers from Israel and Switzerland. DOT encodes digital data into DNA molecules, which are then embedded into objects. In contrast to internet of things, which is a system of interrelated computing devices, DOT creates objects which are independent storage objects, completely. DNA could store all of the world's data in one room.

V.CONCLUSION

DNA will be the next big thing for digital data storage in the future. Thus using DNA for data storage, it is possible to store huge amount of data in very less size. As DNA can retain data for millions of years, it is possible to store data for a long time. By using this technique, data is compressed and the security to the data is provided. DNA digital data storage will be the only hope for storing data in near future. It will revolutionize the digital technology for sure.

VI.RESULT ANALYSIS

This concept to the more hardware device space will be saved. With low maintains.



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den1.fasta - WordPad
File Edit View Insert Format Help
|>gi19626685|ref|NC_001477.1| Dengue virus type 1, complete genome
AGTTGTAGTCTACGTGGACCAAGACAGCTTCGAACTGGAGGCTTGCCTAACGTAGTTCACACAGT
TTTTTTAGAGAGACACTCTCTGATGACAAACCAACCGAAAAGACGGGTGACCGCTTTTCAATATGC
TGAAAACGGCCGAGAAACCGCGGTCTCACTGTTTTCACAGTGGCGAAGAGATTCTCAAGAGGATGCTTC
AGGCCAAGGACCCATGAAATTTGGTATGGCTTTTATAGACTTCCTAAGATTTCTGACCACTACCTCAACG
CAGGAAATTTGGGTAGATGGGGCTCATTCAAGAGAAATGGAGCGATCAAAGTGTTCAGGGGTTTCAAGA
GAAAATCTCAAAACATGTTGAACATAATGACAGAGGAGGAAAGATCTGTGACCACTGCTCCTCATGCTGCT
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AGAGGAAATACACTTTGTTTAAAGCCTCTGCGAGGTGCAACATGTGCAACCCCTATTGCAATGGATTTGG
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CTGTGGTGCATGCCAGGACATGGGTGACCTATGGAAACATGTTCTCAAACCTGGTGAACACCGATGA
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VII. FUTURE ENHANCEMENT

Motivating IT to contribute to technology development for computing applications will directly catalyze the development of new technologies and applications. The same technologies needed for DNA based digital storage are directly adaptable to biological DNA Database. DNA based storage method can be used in distant future to store data in a secured manner and for long time storage and can solve the problem of limited space.

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