DIGIT-ALL

Dept. of Computer Science and Engineering.

Gandhi Institute For Technology Bhubaneswar

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DIGIT-ALL

THE E-MAGAZINE, EXPLORES THE TECHNICAL SKILLS OF STUDENTS & FACULTIES. THE MAGAZINE HAS ARTICLES ON LATEST TECHNOLOGIES, CARTOONS, QUIZZES AND MANY MORE FUN FACTS.

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Prof. Pratyush Ranjan Mohapatra

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Vision of the Department:

To produce the professionals of highest grade, bearing the ability to face the challenges posed by latest computing paradigms, founded by intuitive quality of education and driven by culture of critical thinking and creativity, towards the betterment of humankind.

Mission of the Department:

To Advance knowledge of computing and educate students in major paradigms of computer science and to create a distinctive culture of research and innovation among the budding engineers with collaboration of faculties, technocrats, funding agencies and experts from other premier institutes for generating a pool of professionals and eco-preneurs with the ability to address the Industry and social Problems.

PEOs of the Department

PEO 1: To gain adequate mathematical, computing and engineering principles in order to advance in professional career or obtain better response in higher studies platforms.

PEO 2: To foster the ability to analyze real life problems, perform required research and design computing systems, in accordance to its solutions that are technically sound, economically viable and socially admired and adaptable.

PEO 3: Will have ability to exhibit professionalism, technical skills, communication skills, team work and humanitarian skills in their profession and adapt to current changes by inculcating habit of lifelong learning.

From Dean Research's desk:

Dear Readers,

Greetings from Department of Computer Science & Engineering!

As a Department of Computer Science & Engineering, We have always strived to provide a well rounded curriculum and training to our students and prepare them in order to face the challenges in their professional life after they graduate from here. Apart from conducting regular academic curriculum, various student driven initiatives, ensures personality development of students at GIFT. One of such initiatives is DIGIT-ALL.

DIGIT-ALL has helped bringing out the hidden treasures within the students as well as the faculty members by away helping them improve their skill, knowledge and understanding.

I on behalf of the whole fraternity of the Department of C.S.E, take this opportunity to thank and congratulate you for making this a success story and as well expect that all of us will put an effort to keep the wheel running.

Thanks & Regards,

Dr Amar Kumar Dash

Dean Research

Gandhi Institute For Technology, Bhubaneswar.

Contents

Articles

Palm Vein Technology

Ms.Gayatri Geetika Patra(CSE-1801298136)
Mr.Subham Ranjan(ECE-1701298377)

With the increase in technology threat to personal data and national security had also increased. The methods that were developed to secure important information from outside intervention were not up to safe mark .There was a need to introduce a technology that secures our data more efficiently from unlawful intervention .

Fujitsu has developed a palm vein pattern authentication technology that uses vascular patterns as personal identification data .Vein recognition technology is secure because the authentication data exists inside the body and is therefore very difficult to forge. It is highly accurate. This technology can be used in various fields like banking, hospitals, government offices, in passport issuing etc. Business growth will be achieved with these solutions by reducing the size of the palm vein sensor and shortening the authentication time.

Hand vein is a biometric modality that seems promising as it is acquired in Near Infrared light (NIR), which implies that skin variations and dirtiness are less sensible than in visible light. Moreover, the haemoglobin which flows in the veins is sensible to NIR light, this way allowing a good quality of acquisition of the hand veins. It is possible to use either the back of the hand or the hand palm. A recent study using back hand vein data and tested with 5 sessions per person and 50 persons showed promising results. The main problem of this database is the low resolution of the images (images at resolution 132x124 pixels).

The first commercialized products have been produced by Hitachi on the back and Fujitsu on the palm. They have been patented but only little information is available on them. These companies

claim a very low FRR (False Rejection Rate) at very low FAR (False Acceptance Rate) on a huge database ? close to 0% on 140000 hands. Unfortunately at this moment, there is no public database allowing verifying these figures.

In general, in the various papers present in the literature, after the acquisition phase, some matching algorithms are used such as the Line segment Hausdorff Distance (LHD) method. The LHD method has good experiment results. But, the structure information of palm vein is not as clear as hand vein, so line-based feature is not a good choice for palm vein recognition. Matching based on minutiae analysis and Hausdorff distance (MHD) was used for hand vein recognition. Minutiae-like feature could also be extracted from palm vein pattern; however, the Hausdorff distance algorithm applied in minutiae analysis is sensitive to the geometrical transformation. Besides P2PM, LHD and MHD, all existing matching methods suffer from the problem of image rotation and shift. Therefore, it is necessary to develop a new matching method which can effectively solve this problem.

This paper presents a new and efficient matching method by introducing the iterative closest point (ICP) algorithm into palm vein verification. The ICP algorithm was firstly proposed by Besl and McKay and it was originally used in the registering of three dimensional (3D) range images. It is also well suited to align two dimensional (2D) images. In the proposed method, we first extract vein information from the Region of Interest (ROI). When matching two ROIs, we use ICP to estimate the rotation R and translation T between them. Then we use the estimated R and T to correct the ROIs so as to reduce the rotation and shift variations. The refined alignment of ROIs can bring great benefit in the consequent palm vein verification. The detail of ICP algorithm is explained later in the report. This paper is about the palm vein technology, its applications, how this technology is applied in real time applications and the advantages of using this technology.

Touch less Touchscreen Technology

Mr.Debasish Pradhan (CSE-1901298114)
Mr.Nirmal Behera   (ECE-1701298291)

It was the touch screens which initially created great furore.Gone are the days when you have to fiddle with the touch screens and end scratching up. Touch screen displays are ubiquitous worldwide.Frequent touching a touchscreen display with a pointing device such as a finger can result in the gradual de-sensitization of the touchscreen to input and can ultimately lead to failure of the touchscreen. To avoid this a simple user interface for Touchless control of electrically operated equipment is being developed. EllipticLabs innovative technology lets you control your gadgets like Computers, MP3 players or mobile phones without touching them. A simple user interface for Touchless control of electrically operated equipment. Unlike other systems which depend on distance to the sensor or sensor selection this system depends on hand and or finger motions, a hand wave in a certain direction, or a flick of the hand in one area, or holding the hand in one area or pointing with one finger for example. The device is based on optical pattern recognition using a solid state optical matrix sensor with a lens to detect hand motions. This sensor is then connected to a digital image processor, which interprets the patterns of motion and outputs the results as signals to control fixtures, appliances, machinery, or any device controllable through electrical signals.

Computer Inventory Software

Mr.Nikhil Chauhan (CSE-19012981500)
Mr. MD.Faizan   (CSE-1801298191)

With increase in workloads and hence increase in professionals, organization faces with the necessity of creating computer inventory reports on hardware and software installed. Professional program for this purpose allows the system administrator make this process automatic, easier and time saving. Among many of its characteristics, the computer inventory tool must be able to answer three main questions: what, where, and when? In other words, the system administrator needs to know the configuration of every PC on the network, every computer's location and their history.

1. "What": In simple sense the program must automatically identify each and every system in the network and must maintain and identify every software installed via its serial number and license.

2. "Where": the computer inventory software has to give the system administrator the opportunity to divide the computer's list into groups, depending on their location, for example. This function is invariably most important and useful for larger companies which constitute of complex networks as well as of offices and branches.

3. "When": the computer inventory software has to be able to record the history of every computer's part or program into log. It does not matter, whether one RAM has been replaced with another one, or two monitors have been rearranged, or the antivirus has been updated in time – all changes should be fixed in inventory program's log. Hardware is frequently replaced, that is why this function is greatly important for companies of any size.Beside there are a few more functions that would be useful for any company.

Firstly, it is an opportunity to form quick reports of any format (.doc, html, xls, pdf, csv, xml, txt…). Report is the main instrument for an IT manager. If there is no possibility to sort the collected date independently and form quick and convenient reports, it can destroy all other program's advantages. Secondly, the interface plays a crucial role. You should understand that it is you, who is going to use this program. That is why the software has to be understandable and ease-to-use for you.

It has to provide you with quick and easy access to necessary information on devices' parameters. Thirdly, the system administrator's duty is not only to be aware of what software is installed on remote users' computers, but audit the software licenses on every computer in the company. That allows killing two birds with one stone: to update the purchased licenses in time and prevent users from using cracked or unlicensed software, which is against the Copyright Law.

It is worth to mention, that every point in the software list has to be confirmed by appropriate documents, which verify that you have rights on using these programs. It is extremely important to choose the computer inventory software carefully and advisedly comparing all its pros and cons. Only in this case you will get the program that can solve all your problems.

Some of the Common Channels of Data Leakage

Mr.Smruti Ranjan Parida (CSE-1601298068)
Ms.Sanjita Ram   (ECE-1601298497)

The problem of data being stolen or leaked is increasing unabated. There are different mediums from which data gets leaked most commonly through hackers' attacks. When you talk about the data breach, the first thing that will pop up in the mind of a layman would be hackers' attacks. Statistics reveal that almost 38 percent of the data is leaked due to the attacks on the database by the cyber criminals. Added to this is the problem of the financial losses caused by these problems. Another big player or maybe factor of losing data is through the portable data storing devices such as USB flash drive. The USB flash drive sizes not more than a couple of inches but still, it has a great capability of storing huge amount of data. This small size factor makes it an extremely difficult task to keep safe, as it is prone to getting lost or stolen. Surveys have proven that a quite high percentage of lost or stolen USB flashdrives contain unsecured confidential data. Most of these devices do not have much of a built in security measures that can make the data secure, so, the data saved in them can easily be fetched out.

Nowadays, you see almost everybody holding a smartphone. This smartphone has become an accessory as well as a bit of necessity as it can perform quite bit functions of a computer. Every year, hundreds and thousands of iPhones gets lost or stolen. As people also use this smartphone as a portable data storing device from which they can operate their data too, so there is a fair possibility of leaking data if someone loses his/her iPhone. It has also become a big source of losing data.

IT experts have started to rate the insider employees of a company as a big source of data breach. The employees of the companies intentionally or unintentionally leak data. They may send an
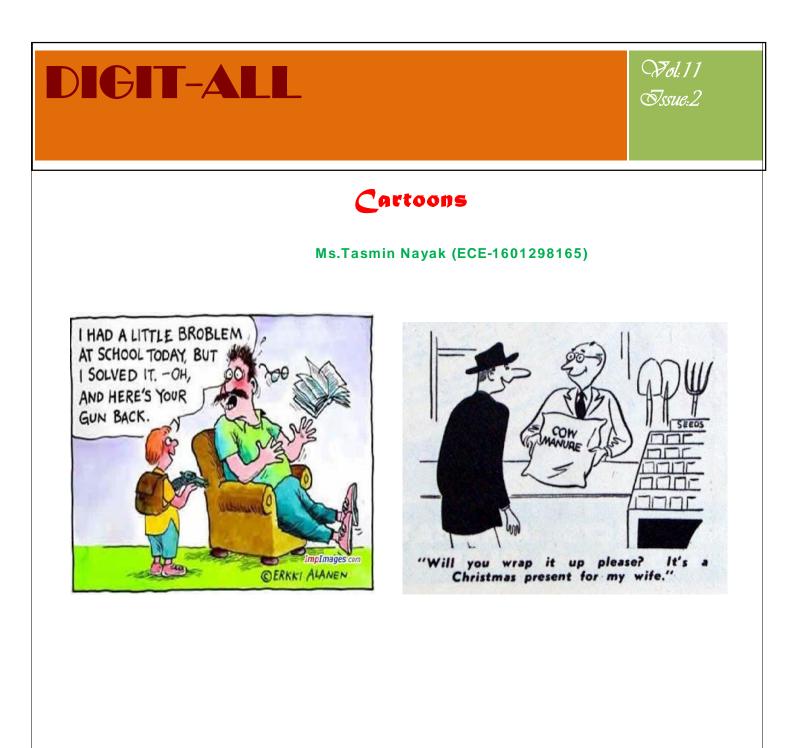
unencrypted email to some wrong email address with sensitive data attached to it or may lose their USB flash drive. However, employees can also dig out desired data from the computer and can carry it out of the company in his/her USB flash drive. Data can be sold to the rival companies or other competitors who will pay a handsome amount to get this data. Confidential data of a company can benefit the rival a lot. You have only seen about 270 days of this year, and it is a short span of time, more than 212 incidents of data breach have been reported. If we make a rough estimate, there is an incident of data breach almost each day of the year. The use of Data Security Software has become absolutely necessary; otherwise, companies have to suffer heavy losses due to these data breach incidents. The company can suffer financial loss due to the heavy penalties imposed by the legislative bodies. The companies who suffer data loss are most likely to lose the confidence of their clients and may lose their goodwill in the market. All in all, data breach can be disastrous for a company.

Interesting Facts

Mr. Utkal Keshari Das (CSE-1701298143)

❖ Bill Gates, the founder of Microsoft was a college drop out.

❖ On one of the world's most popular shopping websites, eBay, there are transactions of approx. $680 per second.

❖ There are approx. 6,000 new computer viruses released every month.

❖ Of all the pictures available over the Internet, 80 percent of these pictures are of naked women.

❖ 'Crash Course' is another name for Microsoft Windows tutorials.

❖ The 'Email' is older than the World Wide Web.

❖ There are about five porn pages for every 'normal' webpage.

❖ Doug Engelbart, invented the first computer mouse in the year 1964, which was made of wood!

❖ One of the world's leading computer and computer peripheral manufacturer, Hewlett Packard, was first started in a garage at Palo Alto, in the year 1939.

❖ If you open up the case of the original Macintosh, you will find 47 signatures, which is of each member of Apple's Macintosh division of 1982.

❖ Amongst the most interesting computer facts is, the first Apple computer which was built by Steve Jobs and Steve Wozniak, was made by using parts they got for free from their employers. They were made to scrounge spare parts from work.

Cartoons

Ms.Tasmin Nayak (ECE-1601298165)

Technical Quiz

Mr.Samir Jena (CSE-1701298175)

❖ *Which of the following computer language is used for artificial intelligence?*

A. FORTRAN
B. PROLOG
C. C
D. COBOL
E. None of the above

❖ *The tracks on a disk which can be accessed without repositioning the R/W heads is*

A. Surface
B. Cylinder
C. Cluster
D. All of the above
E. None of the above

❖ *With respect to a network interface card, the term 10/100 refers to*

A. protocol speed
B. a fiber speed
C. megabits per second
D. minimum and maximum server speed
E. None of the above

❖ *Which Motherboard form factor uses one 20 pin connector?*

A. ATX
B. AT
C. BABY AT
D. All of the above
E. None of the above

❖ *Process is*

A. program in High level language kept on disk
B. contents of main memory
C. a program in execution
D. a job in secondary memory
E. None of the above

❖ *Which of the following condition is used to transmit two packets over a medium at the same time?*

A. Contention
B. Collision
C. Synchronous
D. Asynchronous
E. None of the above

❖ **Addressing structure**

A. defines the fundamental method of determining effective operand addresses

B. are variations in the use of fundamental addressing structures, or some associated actions which are related to addressing.

C. performs indicated operations on two fast registers of the machine and leave the result in one of the registers.

D. all of the above

❖ **You have a class A network address 10.0.0.0 with 40 subnets, but are required to add 60 new subnets very soon. You would like to still allow for the largest possible number of host IDs per subnet. Which subnet mask should you assign?**

A. 255.240.0.0   B. 255.248.0.0

C. 255.252.0.0   D. 255.254.0.0

❖ **Each of data files has a _____ that describe the way the data is stored in the file.**

A. File structure   B. Records

C. Fields   D. Database

❖ **After you _____ a record, many data management the environments require you to issue a command to save the changes you made.**

A. Delete   B. Update

C. Sort key   D. Index

❖ **What hardware architectures are not supported by Red Hat?**

A. SPARC   B. IBM-compatible

C. Alpha   D. Macintosh

❖ **The physical layer of a network**

A. constructs packets of data and sends them across the network   B. controls error detection and correction

C. defines the electrical characteristics of signals passed between the computer and communication devices

D. All of the above

Answers

1. B
2. B
3. C
4. A
5. C
6. B
7. A
8. D
9. A
10. B
11. D
12. C

POETRY

Ms.Debasmita Nayak (CSE-1821298022)

RAIN

The smell of wet sand,
 It's going to rain.
The rustling of crisp leaves,
It's going to rain.
The mystic croaking of frogs,
It's going to rain.
The sky is black filled with sounds of thunder,
It's going to rain.
There's a smile on the farmer's face,
Oh it's going to rain.
I think the Gods are happy,
 And now am sure it's going to rain.