



E- FOCUS

COMPUTER SCIENCE & ENGINEERING

2015-16

M.I.E.T. ENGINEERING COLLEGE, TRICHY-7

DEPARTMENT OF CSE

Chairman's Message



Er . A . Mohamed Yunus

Chairman

M.I.E.T. Institutions.

Being the current world not a hasty track, the responsibility of creating a high-quality educational institution is challenging and embellished with a host of initiatives which validate them over an extended time span. Moreover, in a world where time and space are compacted, there is a massive defy for success which necessitates knowledge, which is current, pertinent and based on real experience. In this situation, the education plays a paramount role in molding, shaping and preparing youngsters to face the challenges of the future world. We at M.I.E.T motivate and empower our students to be enduring learners, critical thinkers and prolific members of an ever-changing global society. Also, the students are encouraged to channelize their potential in the pursuit of fineness in a holistic and student-centered environment.

Moreover, M.I.E.T strives hard to sensitize its students to the needs of the community and inculcate values like truthfulness, fortitude and acceptance of individual differences am confident that M.I.E.T will always be a bonfire of light guiding the fate of its students, while blistering kindness and compassion as it ascends high in its pursuit of academic excellence and accomplishment of our motto “Humanize, Equalize, Spiritualize”.

To ensure the same, we have an excellent portfolio of industry professionals and academicians on our faculty, who provide a holistic view of the shades of engineering and managerial operations to our students. The students are prepared to enrich their careers by endowing them with the necessary talent and critical thinking to become self-directed learners and prolific citizens contributing positively to the society.



Dr.S.Guharaja

Principal

MIET Engineering College

Principal's Message

Our institution provides a balanced environment focused on shaping students into leaders of tomorrow by offering comprehensive education through a developmental approach. It strives to make the pursuit of excellence a way of life with enthusiastic students willing to learn, supportive parents and a dedicated professional staff members committed to provide the students with a quality education.

M.I.E.T.'s growth and success result from its commitment to provide lifelong learning through courses that balance theory with practice and teach fundamentals in the context of how they can be applied in the real world.

Training and Placement cell functions as a highly effective professional development tool conformed to the educational requirements of the motivated engineers. The practice given by the faculty members helps the students to cultivate a strong and diverse pipeline of talent. The guidance of experienced and dedicated teachers enables the budding engineers from all communities to reach their aspirations and ambitions to secure a better future. I urge everyone to advance their career to become the Movers of Technology.



D.Yuvaraj

HOD/CSE

HOD's Message

M.I.E.T offers one of the best Computer Science programs in Tamil Nadu. We offer a breadth of knowledge covering the major areas in computer science such as computer networks, graphics, artificial intelligence, algorithms and complexity theory. As the Head of the Department, I feel privileged to be leading a talented group of dedicated staff, inspiring teachers, and prominent learners. Our students make fundamental contributions to knowledge across theoretical and applied areas of computer science. Our Department maintains strong ties with industry, research organizations, and the community at large.



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VISION AND MISSION OF THE INSTITUTION AND DEPARTMENT

Vision of the Institution

To be a center of excellence in Technical Education through Technical, Ethical and Professionals skills for meeting the diverse needs of the Society, in particular Muslim minority community and the Nation.

Mission of the Institution

- To impart Quality Education, Training and Research in the fields of Engineering and Technology.
- To provide a conducive learning environment that enables the students to achieve professional and personal growth.
- To expose the contemporary issues of society, ethical practices and to create environmental awareness.
- To provide the required infrastructural facilities for developing the professional and innovative skills.

Vision of the Department

To attain excellence in Computer Science and Engineering field so as to address societal problems through active research, maintaining ethical standards.

Mission of the Department

- M1. To empower with technical skills to solve the real time problems through interdisciplinary approach.
- M2. Expose to international ethical practices.
- M3. Provide personality development for an effective leader and individual member of a team.

DEPARTMENT EVENTS

SEMINAR ON CRYPTOGRAPHY AND NETWORK SECURITY

The Department of Computer Science and Engineering, MIET Engineering College has conducted a one day seminar on 28.08.2015 Friday at 10.00 am. Dr.S.Guharaja, Principal, presided the seminar and Mr.D.Yuvaraj, Head of the Department, CSE welcomed the chief guest and the students. Dr.P.D.Sheba Kezia Malarchelvi, M.E, Ph.D, Professor & Head, CSE, J.J.College of Engineering & Technology, Trichy handled the sessions on “Cryptography and Network Security”. She explained about the various cryptographic algorithms and about Confidentiality, Integrity and Authentication. The event was very successful and helpful for the students. S.Iswarya, K.Harikrishnan, G.Nirmal kumar of final year gave the oral feedback about the session.Mrs.S.Shanmugapriya AP/CSE, proposed the vote of thanks.

SEMINAR ON NEW TRENDS IN MULTIMEDIA

The Department of Computer Science and Engineering, MIET Engineering College has conducted a one day seminar on 20.08.2015 Thursday at 10.30 am. **Dr.S.Guharaja**, Principal, presided the seminar and Mr.D.Yuvaraj, Head of the Department, CSE welcomed the chief guest and the students. **Mr.R.Vijayalayachozhan, M.E., Branch Head, Elysium Technologies**, Trichy handled the sessions on “New Trends in Multimedia”. He specified that multimedia learning is that it takes advantage of the brain's ability to make connections between verbal and visual representations of content, leading to a deeper understanding, which in turn supports the transfer of learning to other situations.

A large percentage of the human brain dedicates itself to visual processing. Thus, using images, video and animations alongside a text stimulates the brain. Student attention and retention increase. Under these circumstances, in a multimedia learning environment, students can identify and solve problems more easily compared to the scenario where teaching is made possible only by textbooks. All together, multimedia learning environments have a direct effect on learning and even on growing as a person. The event was very successful and helpful for the students. M.Asmath haseena & Mohamed yousuf of third year gave the oral feedback that they have enjoyed the session a lot & got an idea to do animation. Mrs.K.Geetha Asso.Prof/CSE , proposed the vote of thanks.

BEST PROJECT

The following projects were selected as a best project for the academic year 2015-2016.

1. K.Harikrishnan, Y.Manikandaprabhu, R.Aravindkumar P.Arunpandi have done their project entitled “**SMART MLA Cooperation with people and government** “ under the guidance of K.Geetha.

2. S.Aiswarya, D.Jayabharathi, A.Kasthuri have done their project entitled “**Lock Square - A Secure and Unpredictable Lock Screen Password Technique for Android Mobiles**” under the guidance of K.Geetha

SMART MLA -COOPERATION WITH PEOPLE AND GOVERNMENT

K.Harikrishnan, Y.Manikandaprabhu, R.Aravindkumar P.Arunpandi

Today, everyone works with apps so the Mobile Phone plays a major role in our day to day Life. Here we are developing an Application for Member of the Legislative Assembly and People work with the digital environment, the simple concept our project is the people who have the problem of their area or their street they will raise the complaint to MLA.

This app work with the Basic of Request and Response method for the services to the people. The user needs to capture and upload the image of the affected area to the cloud storage. The corresponding MLA may know where the affected area by means of GPS. The user must upload the details about the affected area to the corresponding MLA, with Ward No and complaint status. We also maintaining a timeline and rating of the MLA, it depends on the MLA response of area people Complaint.

LOCK SQUARE - A SECURE AND UNPREDICTABLE LOCK SCREEN

PASSWORD TECHNIQUE FOR ANDROID MOBILES

S.Aiswarya, D.Jayabharathi, A.Kasthuri

In the field of information technology, Cyber security is the most essential department which ensures that all the confidential data are under secure, Redundant and available with proper authentication mechanism. Smartphones – are the most vulnerable equipment which holds all the confidential of a person in a single location or easily accessible for authorized persons. Now days, pattern locks or pin or password attacks are still compromised by brute force attacks. In the field of cyber security authentication fencing is more important than authentication reporting. A notification that our smartphone is compromised is not much important than our data. In the above all scenario image lock is better authentication mechanism than any other locking's. Hence, in this project planned to develop an Image and Color based unlocking tool for the smartphones like android, where it won't work on bad hands. Brute force attack is not possible or it takes much longer time than any other locks. The important part of this locking mechanism is self-destruct. Now days, using android phones which online backup is common in nature. It is possible to get all the data in online even though if the mobile is crushed instantly, hence the important part is avoid unauthorized access. In this project, color square pattern lock, is the combination of colors and edges which is used for unlocking, this methodology works even though if you used in group of peoples. This combination of this lock is unpredictable even by shoulder surfing.

ARTICLES

Why Cyber security Will Change the Internet of Things

Everything is connected everywhere

We're surrounded by smart. Smart phones, smart TVs, smart toasters, and doorbells. Anything and everything can fit a processing unit inside of it and everyone and everything is connected to the internet.

In the short term, we've some immediate returns on productivity. When every smart device is communicating, self-repairing, and learning, things start going a lot smoother. From business processes to managing the home, smart devices connected under the umbrella of IoT are changing things for the better. Duties are simpler to accomplish, tasks easier to organize, and management is more enjoyable.

The Internet of Things leaves us open to cyber attacks

One key drawback of having all of these systems constantly connected to the internet is the threat of cyber attacks. We are far more susceptible to cyber attacks when our devices are connected in the network. Hacking into your smart toaster, for example, could lead to finding a network node. This node could lead to the leakage of sensitive personal information. As we go into the future, these risks must be addressed.

The implications of this are manifold. One thing that will be persistent in this constantly changing space will be that defense strategies will continue to evolve. In order to prevent hackers from having access to important data or even controlling certain tasks, the sophistication of defense mechanisms within IoT devices must be top tier.

How encryption can help?

One strategy that is currently being employed is emphasizing the importance of user awareness, education, and safety. Storing and generating passwords will likely be made easier as well as to make individual users less exploitable. Securing passwords and attempting to educate users is only half the battle, however.

What we've learned from Blockchain

Technologies like Blockchain light the way for defense strategies. With Blockchain, you've got a global, distributed ledger -- one that is immutable and secure. How is a large secure infrastructure like this one managed and maintained? Blockchain is built on encrypted keys and some other well-understood cryptographic principles. These principles will continue to be adopted in a piecemeal fashion and improved upon as the years' march on and hacking attempts grow more bothersome.

The Internet of Things: liability and innovation must be balanced

The question of liability will further innovation. Companies will look to remove blame by enacting safety protocols. When we're interconnected, shared blame can be a starting point for true innovation.

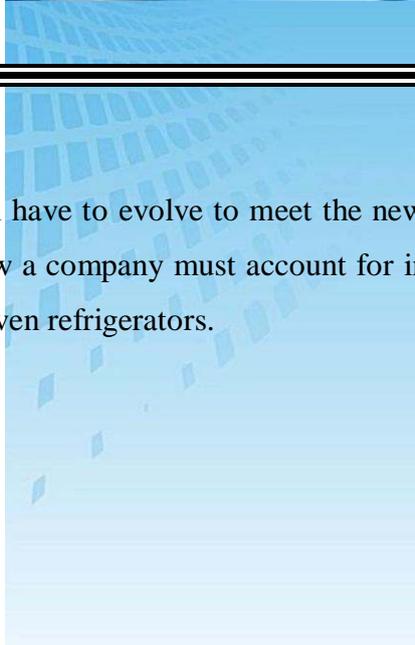
“The broad range of connectable home devices—TVs, home thermostats, door locks, home alarms, smart home hubs, garage door openers, to name a few—creates a myriad of connection points for hackers to gain entry into IoT ecosystems, access customer information, or even penetrate manufacturers' back-end systems,” Deloitte, the massive advisory firm, declares.

As the opportunities for IoT open up, our risk management efforts must double, Deloitte suggests. “The IoT is forcing many business leaders to reassess their decentralized approaches to cyber risk management.” Traditional architectures and security protocols won't work in IoT ecosystems. Therefore, we can expect cyber risk and IoT to evolve as they will continue to demand more from each other.

As the IoT and cybersecurity technologies continuously advance. In the parallels are hackers who are constantly creating new bugs and exploits to crash systems and steal data.

Conclusion

For cyber security companies, the difficulty truly lies in creating tools that will protect all of the different devices that are now integral to an individual's life. There are no more households with just one computer or a person with just one internet connected device. We must protect the millions upon millions of devices that are used every second of the day and that job alone is both awesome and tremendous.



Cyber security, however, will have to evolve to meet the new security demands brought on by the Internet of Things. Now a company must account for interconnected camera systems, telephones, automobiles and even refrigerators.

by
K.Geetha
Asso.Prof/CSE

Why We Desperately Need Better Cyber security

New problems are presented by the Internet of Things

The potential of the Internet of Things, as you might assume, is positively staggering as an entirely interconnected world would mean unprecedented access to data that can be used to shape the future. It is a goal towards uniform access to the internet and the ability to communicate with other people all over the world.

To create a world above the physical, to make an internet without borders. It is the dream and fascination of many tech entrepreneurs and tech writers as we see the day of complete internet coverage draw near.

In this time, however, we must consider every eventuality and potentiality if such actualization were to occur.

This is a truly ailing problem as the threat of hacking becomes much greater given the sheer number of access points that are being created in pursuit of the Internet of Things. In this article, we are going to examine the multiple reasons why we need better cyber security in the incoming Internet of Things.

A massive network and the law of averages

By the sheer principle of technological evolution, the number of access points that are being created is going to be a real problem for users around the world and a real joy to hackers everywhere. As major tech companies push for greater access, devices must be made and acquired for potential internet users to access the internet.

There is no shortage there, however, as the number of smart phones, and companies making them, seem to increase almost daily. It is no small feat to manufacture a nation's weight in phones, but our major mobile companies are doing it with ease.

The problem lies in the fact that every smart phone is a potential access point for any malicious actor to exploit. The law of averages alone dictates as the overall number of devices increases so will the number of hackers. This isn't including all of the laptops and tablets that are already out there being used with malicious intent.

Security is all about approach

It is an impossible feat to require all smart phones to be encrypted, but, if anything, this means that it is even more important for us to implement cyber security on all our devices. If you are not, then you may very well fall victim to one of the many hackers attempts as their network grows daily. If only by the numbers alone do, we need greater cybers ecurity.

The interplay of devices, along with the numbers, shows an immediate and growing need for better cyber security. The question is, how we implement such security over that many devices. The answer is we can't do it uniformly across the globe. Truly, the only way to implement true uniform cyber security is to educate anyone and everyone who has access to a smart phone, tablet or computer.

Safety is in everyone's hands now

This may sound tedious, but, even a simple pamphlet inserted into every box or a default program that explains, in detail, how to set up your own network security.

Anything at all would be better than leaving everyone up to their own devices to figure out how to deal with the growing hacker threat. Unless someone is told they most likely won't know how to create strong passwords or use a VPN. They most likely wouldn't know how to even check for viruses or get rid of them.

In truth, most users, in general, do not know how to encrypt files or networks. The basic security standards are barely adequate to deal with the whole host of malicious software that battles around the web. That is why education is so important. The only true way to protect our global data is to inform every user on the planet and put the power in their hands.

Conclusion

The Internet of Things is an idea worth getting excited about, but, the risks are not to be ignored. With the mass integration of our devices well underway, we must make sure to understand everything we can do about cyber security. There is no complete answer, but, we know it starts with education. The numbers alone are enough to make your hair stand on end about the prospect of millions of compromised devices.

We cannot let this deter us from the future as the fight can be won with education and perseverance. We must not let hackers and malicious actors steer us from the path of progress. If we stay informed and well planned, then we will ultimately prevail in our race to the future.

by
B.Rama
AP/CSE

Securing IoT for Smart Home System

Abstract

This paper presents an approach to incorporate strong security in deploying Internet of Things (IoT) for smart home system, together with due consideration given to user convenience in operating the system. The IoT smart home system runs on conventional wifi network implemented based on the AllJoyn framework, using an asymmetric Elliptic Curve Cryptography to perform the authentications during system operation. A wifi gateway is used as the center node of the system to perform the system initial configuration. It is then responsible for authenticating the communication between the IoT devices as well as providing a mean for the user to setup, access and control the system through an Android based mobile device running appropriate application program.

INTRODUCTION

Recent advancements in the semiconductor technology have enabled cost effective solutions to directly integrate wireless network connectivity in embedded processors and sensors, which in turn lead to great interest in the Internet of Things (IoT), defined as the networked interconnection of everyday objects. IoT is now considered as the ready technology for the consumer electronics market, and smart home has been touted as one of the market segments with very high potential for IoT deployment, such as to enable home automation and energy management. However, the rate of IoT adoption among home users depends on their willingness to purchase these devices, and convenience and security are identified to be the two key factors influencing their decision. As such, this paper describes the design and implementation of a Wi-Fi based IoT smart home system that uses a gateway to enable secure communication between IoT devices, and to also allow user to configure, access and control the system through user friendly interface running on mobile devices such as the ubiquitous smart phone.

SYSTEM DESIGN CONSIDERATIONS

While many existing home automation system uses ZigBee or Bluetooth for the wireless connection, wifi is also a viable alternative due to the introduction of IPV6 that enables the connection of almost unlimited number of embedded devices, and its ubiquitous presence in many CE devices.

Security challenges in IoT include privacy, authentication and secure end-to-end connection. In addition, with the presence of multiple smart home standards currently used in the market, any security scheme needs to consider intercompatibility among the multiple standards. Figure 1 shows the setup of the proposed system, consists of a home gateway and several IoT devices connected via a wifi network. The user can access and control the system using a mobile device by accessing the home gateway. The gateway is responsible for authenticating and monitoring the communication between devices in the system. The gateway can also provide translation between different IoT standards at the lower layer while maintaining a common security scheme at the higher layer. Each IoT device can only communicate with the gateway. Based on user preferences, the information from one device can also trigger the gateway to send a message to another device in order to response with appropriate action.

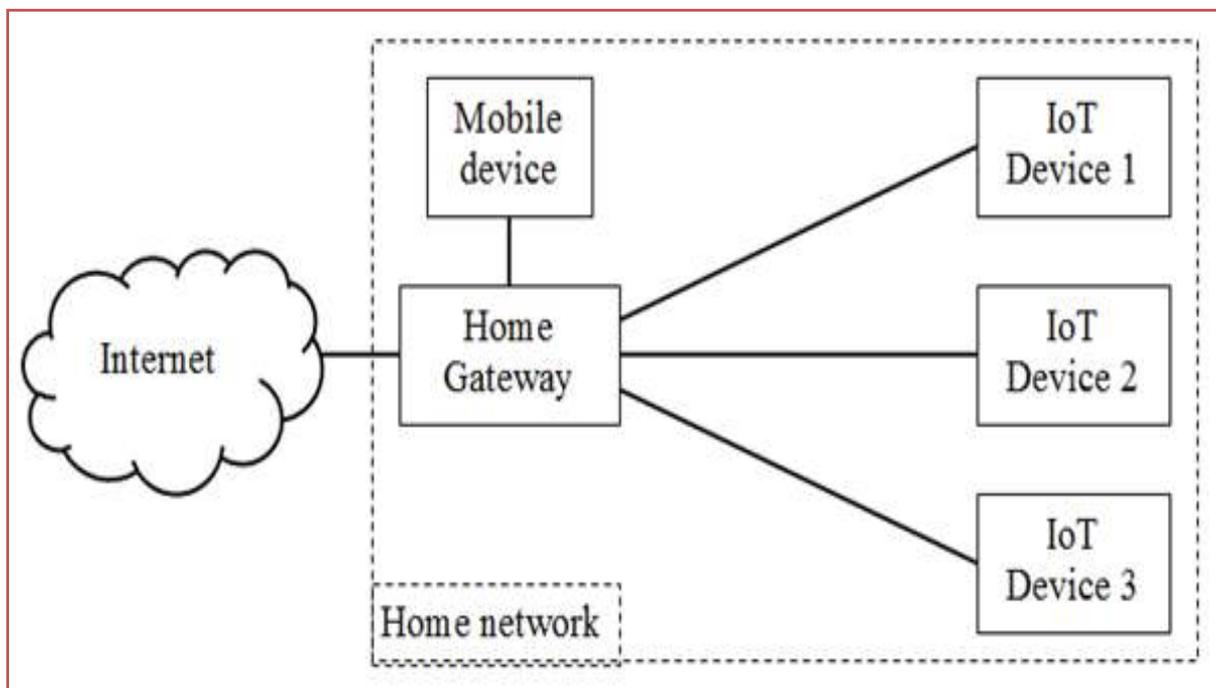


Fig 1. System Setup

AUTHENTICATION PROCESS

Authentication is a major challenge in IoT but most CE devices lack a user interface for entering authentication information. As such there is a need for a convenient and robust authentication procedure for the smart home system. One such approach is the use of public key mutual authentication protocol, with pre-shared keys between a gateway and a new device, based on the procedure shown in Figure 2.

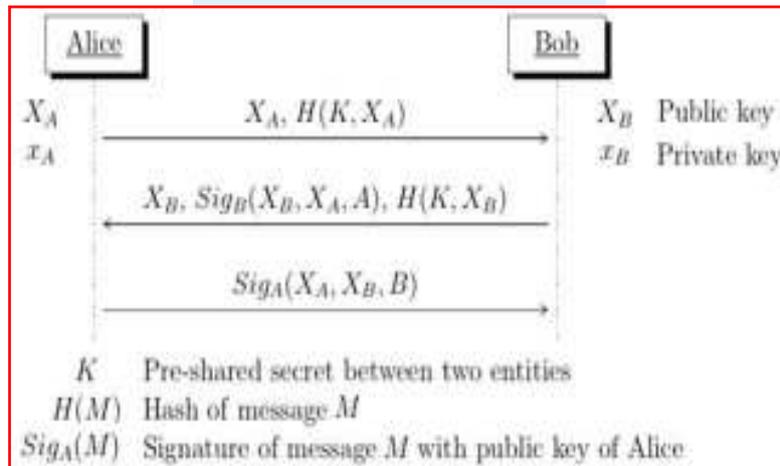


Fig. 2. Authentication Procedure

The protocol uses Elliptic Curve Cryptography due to its high security level per key size while the use of pre-shared secret keys (K) removes the need to establish additional public key infrastructure for the system. After the authentication process is done, both parties can then use Elliptic Curve Diffie-Hellman (ECDH) operation to create a shared key for the subsequent symmetric encryption. Mobile devices can be used to facilitate the authentication process for devices with restricted user interface.

SYSTEM OPERATION AND IMPLEMENTATION

The system initially only consists of the gateway in the home network; IoT devices have yet to be connected, while the user operates a wifi enabled mobile device (e.g. Smart phone) which can communicate with the gateway. Two rounds of authentication are needed. The first round is to authenticate the mobile device with the IoT device in order for the mobile device to share the home network credentials with the device. The second round is to authenticate the IoT device with the home gateway to establish connection for subsequent communication. All authentication rounds follow the protocol as indicated in Figure 2.

For the first authentication round, the user first obtains and loads the identity and the pre-shared secret key of the IoT device to the mobile device. Device identity can be any unique information of the device, e.g. device ID. The user then turns on the IoT device, which automatically starts in wifi access point (AP) mode, which allows it to be connected to the mobile device to start the authentication process. After both devices are mutually authenticated, the mobile device sends the home network credentials and the gateway location to the IoT device.

Communication between devices is performed based on the User Datagram Protocol (UDP). Before data is sent, the message is encrypted through symmetric cryptography (e.g. Advanced Encryption Standard (AES)) using the shared key created by the ECDH process. As each device only needs to store one shared key to communicate with the gateway, it reduces the storage burden on the IoT device. During operation, each device in the system can advertise a list of events and actions to the gateway after the device setup. Events refer to the information obtained from the device (e.g. the device is on) while actions refer to the methods provided by the device (e.g. turn on/off the device). The user can access the gateway via the mobile device to get the list of events from all devices and setup different response actions for different devices.

Conclusion

Security and convenience are two major requirements for successful deployment of IoT in a smart home environment. This paper proposes and implements a smart home system based on wi-fi network. Using the AllJoyn framework as the base, the proposed system uses a gateway to provide a better authentication process and a convenient interface for the user via an Android device. However, the current method of entering device ID, pre-shared secret key and AP name by hand during the addition of a new device is inconvenient to the user, even though this process is only to be performed once for each device. A possible improvement to perform this procedure is to embed the relevant information of each device in a QR code on the device, which can then be scanned and read by the Android application initiated by the user.

By

A. Deenadhayalan and K. Harikrishnan

Final Year/ CSE

Research on Visualization Techniques in Data Mining

Abstract

Visual data mining can help in dealing with the flood of information. The advantage of visual data exploration is that the user is directly involved in the data mining process, through analysis the results of the information visualization, user can integrate the specialist knowledge with the data mining algorithm. This paper summarizes current visualization methods applied in data mining. Current applications about visual data mining technique are analyzed combining with some national advanced data mining tools. Trends are clarified based on the task and object of visual data mining.

INTRODUCTION

In digital information age, the rapid development of networks and modern electronic communications equipment cause data flow growing exponentially. A large number of potentially useful knowledge hides in these sharp-growing data. There are two types of the trend of data: data \rightarrow data garbage, data \rightarrow information \rightarrow knowledge. The key of the finally export of data lies in effective methods of information extraction and knowledge discovery tools. Data Mining is the process of extracting potentially valuable knowledge from a lot of historical data. Data mining can be divided into two categories from the perspective of data analysis: descriptive data mining and predictive data mining. The former describe data in a concise means and provide the fun general nature of data. The latter analyze data, set up one or a group of models and attempt to predict the behavior of new data sets. Visualization is the process of transforming data, information and knowledge into a visual representation, and provides an interface between two information processing system of human and computer. Using effective visual interface can quickly and efficiently deal with large amounts of data to find hidden features, relations, patterns and trends, and can lead to new foresight and more efficient decision making.

Visual Data Mining technology is set up on the foundation of visualization and analysis process, which describes the structure and displays the functionality of data, uses visualization to enhance data mining treatment based on the capability of human apperceiving patterns, exceptions, tendency and relationship. Some data mining techniques and algorithms are difficulty for decision makers to understand and use them. Visualization made data and mining results easier to understand, permit comparing and testing results, and can be used to

guide the data mining algorithms, enabling users to participate in the process of decision analysis.

VISUALIZATION TECHNOLOGIES

The goal of visualization technology is to help people to enhance cognitive ability. Computer-based visualization technology is not only to deal with the computer as a tool for integration of information, but also as a communication medium between the users and computer by using computer graphics and other technologies to consider more samples, variables and relations. Visualization establish a feedback loop between cognitive stimulation and user cognition, using the knowledge of human cognition, at the same time avoiding observed inexact pattern, so as to avoid mistake decision making and action. Visualization technology of data mining is a typical interactive. Visualization technology is roughly divided into two categories depending on whether or not including physical data: visualization in scientific computing and information visualization. The objects showed in visualization in scientific computing involve different types of spatial data such as scalar, vector and tensor. The studies focus on how real, and quickly displaying the three-dimensional data field. Information visualization is oriented to multidimensional scalar data. The studies focus on designing and selecting suitable display way to show large multi-dimensional data and their mutual relations so that the user can understand. Data mining technology oriented mainly on information visualization. Information visualization can be seen as regulated mapping from the data information to visual form and to people perceived system.

Traditional Visualization Methods

Traditional visualization methods are used mainly in low dimensional data, including statistical chart, bar chart, line chart, pie chart, coxcomb plot, q-q maps, scatter diagram, partial regression curve, contour maps, timing chart, the nuclear curve, box chart, color coding, data cube. Data cube is a multi-dimensional structure formed by organizing data by a number of dimensions, as shown in Figure 1. Users can observe flexibility the data in the database at multi-angle, multi-dimensional through adopting various kinds' analysis action such as slicing, cutting, rotating and drilling, then look into the information and content contained in data. However, data cube lacks intuitive in performance, especially when the dimensions beyond the three-dimensional, the data collection and presentation are more difficult.

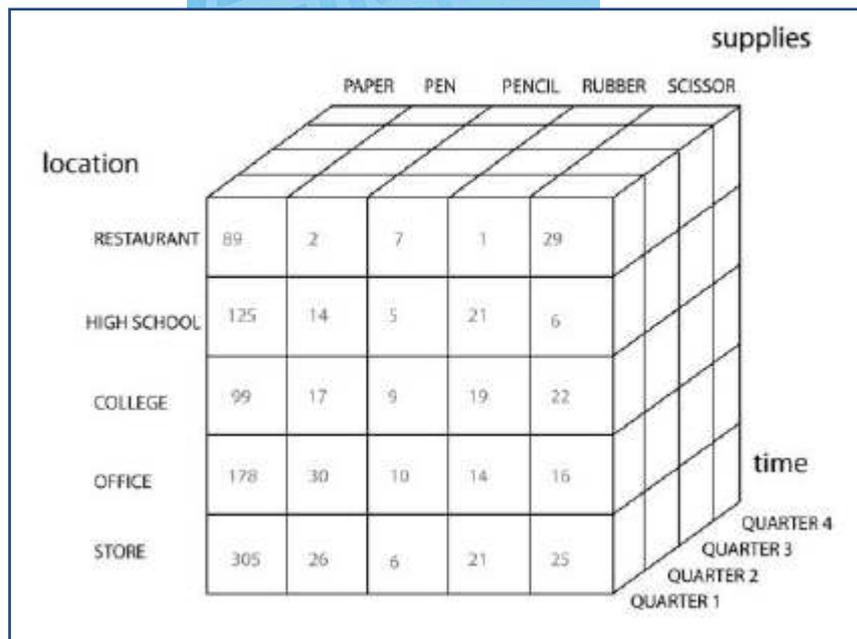


Figure 1. Data Cube

Visual Data Mining researches focus on multi-dimensional data, so, this paper does not introduce the traditional visualization method in details.

Emerging Visualization Technology

1. Visualization Methods Based on Geometric Projection Technology:

The goal of visualization methods based on the geometric projection technology is founding the interesting projection of multi-dimensional data sets, thus transforming multidimensional data analysis into analysis a small number of interest dimensions data analysis, including scatter matrix technology, framework maps, survey maps, Andrews curve techniques, parallel coordinate visualization technology, radioactive visualization technology and detective statistics, such as principal component analysis, scaling dimension.

2. Image-Based Visualization Technology:

Image-based visualization technology maps each multidimensional data to an image, such as line maps, icons, and color map. Line maps map two dimensions to show the dimensions, the remaining dimensions are mapped into angle and the length of component. The technology limits the number of dimensions that can be visualized. Icons are some very small maps; the size of its different characteristics is decided by the value of particular variable, such as needle-shaped icon, star icon. In star icon, the different directions relative to

the origin corresponds to different variables; the length of the radius projected on these directions corresponds to the value of variables.

3. Pixel-Oriented Visualization Methods:

Pixel-oriented visualization methods map each data value to colored pixels, and express the data value that belongs to each property in separate windows. The advantage of this method is that massive information can be described one-time and will not have overlap. Not only can effectively retain a small fraction region of users interested, but also overview the data. If a pixel represents a data value, this method can visualize maximum data of current displayed (up to 1, 000, 000 data values). Visualization methods such as recursive mode technology, radio division of technology, spiral technology and Z-order techniques belong to such technology.

New Development of Visualization Technology

1. Distortion Techniques:

Distortion techniques show part of data in high-level details and other data in low and many details levels. The technology provides a focused approach while maintaining an overview of the data at the same time, which is conducive to the process of interactive exploration. There are typical distortion technologies: fish-eye view, compression distortion technology (hyperbolic browser) and so on.

2. Interactive Technologies and Collaborative Technologies:

Interactive visualization technology allows visualization of dynamic changes in accordance with detection objects, and makes combination of diverse, independent visualization possible, such as interactive mapping, projection, and filtering, scaling, interactive links and brushing. The user can compare much models, make full use of the advantages of different visualization methods and descriptive ways of different models. When emphasizing some part of a model, descriptive ways of different associated models will be displayed automatically in a number of independent windows at the same time. General use of such technology can obtain more information than the independent consideration of these visual components. Collaborative technologies allow producing description of the raw data and many different description ways of the corresponding model, which is conducive to comparative analysis of the model.

3. Drill-Through Technology:

Drill-through technology means that we can see part of the model are extracted from which original data and can access them when selecting a part of model. For example, decision tree visualization methods allow selecting and drill-through the branches of the decision tree, so that users can access the data relevant to the structure of the branches, while ignoring other data description.

4. Virtual Technologies:

Virtual technology can output model results to a virtual device or virtual visualization environment, which enables users to stay. Users can search interesting information through navigation, and obtain a more intuitive understanding of data and analysis. This technology can combine the cognitive abilities of people, and make people fully integrated into the process of data mining. Virtual technologies which have been proposed are data cube and helmet display.

THE APPLICATION OF VISUALIZATION TECHNOLOGY IN EXISTING DATA MINING TOOLS

Whether or not data mining tools can achieve data visualization, mining model visualization, mining process visualization, and the extent, quality and interactive flexibility of visualization will had a strong impact on the use and explain capacity of data mining system. According to the performance comparison table of advanced data mining tools provided by the literature , even though the current mainstream mining tools such as SAS Enterprise Miner, IBM Intel-ligent Miner, Teradata Warehouse Miner and SPSS Clementine are able to provide the common mining process and mode, but the application of visual technology is still very limited, methods are also single, mainly concentrated in the visualization of initial view and the results (model), the analysis process still belong to the black-box operation for the majority of users. The loose contact between visualization and analytical data mining represent the vast majority cases of visual data mining technology. Therefore, even though new technologies emerge continuously in the study of visualization methods of data mining, but the application in the sophisticated data mining tools is still not enough depth and breadth.

CONCLUSIONS

It has been proven that visualization of data mining has extreme value and potential in the exploratory data analysis and treatment of large databases. The current methods of visualization of data mining can be roughly divided into the following groups. The first group is composed by traditional methods of visualization or algorithm independent of data mining. The second group describes the mode of extraction through data mining algorithms, thus contributing to a better understanding of the model. The third group connects closely with a variety of visualization methods in the running process of data mining algorithms. Therefore, future work includes two aspects, first, developing appropriate visual mining methods for complex information structure of semi structured and unstructured data such as Web data and text; second, connecting a variety of visualization methods closely with traditional methods coming from statistics, machine learning, operations research, simulation technology, blending into the process of data mining, combining the rapid and automatic data mining algorithms and the human brain's cognitive ability and judge ability, improving the quality and speed of the process of visualization of data mining.

BY

H. Mohamed Hamdhan and A. Mohamed Sultan

Third Year/ CSE

GALLERY

Seminar on New trends in Multimedia





Polytechnic Students in Android workshop



Lecture on Network Security



Polytechnic students in Android Workshop





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