ABSTRACTS-YEAR 2001

THESIS

COMPUTER SCIENCE

CS-01-1
MULTICAST PUSH CACHING SYSTEM
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The World Wide Web (WWW) continues to grow at an exponential rate, leading to the problems of access latency and overloaded servers. The distributed cooperative caching concept is applied throughout the Internet community to reduce bandwidth usage, improve web server availability and improve user access latency. The distributed cooperative caching system is a group of web caches sharing their contents and workloads. However, cache consistency could not be satisfactorily manageable. Some cached objects are not up-to-date, thus they could not serve user requests immediately.

Multicast push technology is proposed to improve the quality of web caching system. WWW documents are continuously delivered to all member caches by reliable multicast transmission. Analysis of user access patterns is designed to accurately predict the objects that are going to be referenced in the future. Concerning bandwidth optimization, caches are designed to dynamically subscribe and unsubscribe to the push operation depending on their interests. Experimental results obtained from this study demonstrate that the multicast push caching system improves the performance of the original cache system. Extra bandwidth usage is spent on data distribution to update cached contents. The proposed system can effectively support the scalability of the cooperative caching system because the data distribution is based on multicast technology that provides optimal bandwidth usage.

CS-01-2
DIRECTORY ENABLED NETWORK: ONTOLOGICAL ANALYSIS AND A CASE STUDY
Khandaker Shahidul Islam
Prof. Phan Minh Dung
The network devices and services are becoming more complex and management task for all these devices and services are not easy from a single point. Different services may need to be coordinated in order to meet user or service requirements. Directory Enabled Network (DEN) could be used to help easy management of a network instead of managing individual resources and services. Directory Enabled Network gives us an Information Model to design an interoperable, distributed, and robust directory service for accessing network applications, services and resources in a platforms independent manner. An implementation of Directory Enabled Network is a client/server application between directory user agents and directory service agents.

Today's networking environment composed of a large number of network elements, and the networking environment is changing frequently. The functionality and services provided by network element depends on directly or indirectly on the environment on which the network elements operate. In other words, the network environment affects ontological purpose of network elements. Using formally defined Directory Enabled Network ontology could assist both directory service agents and directory user agents to work consistently with network elements in the constantly changing environment. But, less attention is given on studying Directory Enabled Network from ontological perspectives using any formal approach.

This study provides a detail framework for the Directory Enabled Network implementation from ontological perspectives in an enterprise. In order to clarify the DEN classes and their relationships as well as explaining the ontological nature of Directory Enabled Network, different networking resources and services that exist in CSIM network are presented as examples. In order accessing a variety of directory and naming services transparently from the Java application, Java Naming and Directory Interface (JNDI) is recommended as a programming interface in Java programming environment for implementing DEN ontology. This thesis can also be taken as a case study of Directory Enabled Network for CSIM Network, which illustrates the initial considerations to implement Directory Enabled Network in an enterprise.

CS-01-3
SECURE HUB MODEL AND SIMULATION
Watcharapong Srinonghang
Dr. Qi Yulu
The general secure hub does not detect the user authentication for network access. It is make complicate maintenance to administrator for updating the database of each user and not flexible to using the network for end user. The protection can be achieved by using managed secure hubs.

The SecureHub model simulates PC as bridge that is very economically with cost-effective connectivity for small installations. This model establishes a system to identify both computer and user authentication. It enables the network administrators to trace and protect the unauthorized users from using the computer on the network. In addition, this model simulates the user connection by using the user account information (user id and password) with the centralized authentication database. The traffic on network should enable detect or filter from user authentication on network equipment and support multiple access to

one network interface. Moreover, it is to do hub security for user connection to the system. Furthermore, this model is meant to contribute to the ongoing discussion and development of methods in the specific network resources and network security.

CS-01-4
A DOCUMENT MANAGEMENT SYSTEM WITH WORKFLOW CONTROL
Gallissara Agavatpanitch
Prof. Vilas Wuwongse
Document management system (DMS) has been applied in many organizations to improve their storage performance. DMS implementations have been focused on document storage and retrieval purposes. This work has tried to propose a new framework of document management system based on the workflow concept with integrated intelligent component to aid routing decision. The primary benefits of the integration of workflow concept with the DMS system is that the system could manage documents that are still active using workflow, rather than managing the documents in their archival states. The workflow concept improves the performance to manage documents in the system in all their life cycle. The main component that provides the intelligent decision, which enhances the flexibility of the framework, is XDD. The XDD language is implemented using the XET program. It provides the ability to query, transform data in the form of XML document. The proposed workflow-enabled DMS system was applied to many document formats of the Thai Government as a study case using the WfXML workflow messaging standard. It was found that the proposed framework is feasible and would enable intelligent message routing to the existing document management systems.

CS-01-5
AN XML RULE-BASED SYSTEM FOR REGULATED E-TRANSACTIONS: A CASE STUDY OF THE OFFICE OF THE SECURITIES AND EXCHANGE COMMISSION, THAILAND
Wajee Teswanich
Prof. Vilas Wuwongse
Since business can be done through the Internet, most of business processes are going to be electronic transactions (e-transactions). The security becomes the main problem of this transaction system. Thus, a regulator is needed in order to manage and control the system as well as to detect abnormal behaviors in the system. A regulated e-transaction needs a rule-based system to assign rules as conditions and agreements for any transactions between organizations. A rule-based system must follow one of the standards to make it easy to use among the organizations. Extensible Markup Language (XML) can be used as the standard of the rule representation and processing of rules.

This thesis proposes two main points. The first one is the XML rule-based system for regulated e-transactions by using XML as the standard of rule representations and XML Declarative Description (XDD) as a theory for processing of the rules. The second one is a case study of implementing the regulated system under this framework as a prototype for the Office of the Securities and Exchange Commission (SEC) of Thailand to evaluate the effectiveness and efficiency of the proposed system.

CS-01-6
INTELLIGENT WEB SERVICES
Suwanee Suwanapong
Prof. Vilas Wuwongse
The Web services paradigm enables automated web application inter operations similar to those performed by autonomous software agents over the Internet. Although industrial efforts in the service-oriented approach provide a foundation for machine-machine automation, the first generation of Web services related technologies (e.g., SOAP, UDDI, and WSDL) were limited to ontological representation, which was an essential requirement for machine-understandable information. Another evolving approach is DAML-S -a Web service semantic markup language -to formulate ontologies with a set of terms that describe service properties and capabilities, as well as interfaces. This study suggests an Intelligent Web Service (IWS) system -a declarative approach to the construction of Semantic Web application by means of a unified modeling language XML Declarative Description (XDD) and an XML-based declarative programming language XML Equivalent Transformation
(XET). By employment of XDD's language expressiveness and inference capability as well as XET's computation and query and document processing, IWS system introduces a uniform representation of ontology axioms, ontology definitions and instances as well as service constraints and rules. The IWS system demonstrates a higher degree of automation and intelligence in a B2B travel business prototype.

CS-01-7
STUDY AND EVALUATION OF DIFFERENT XML QUERY LANGUAGES
Uttam Kumar Deb Nath
Dr. Dencho N. Batanov
XML is becoming a potential candidate for the next generation web document format. A query language for extracting information from the XML documents is worth mentioning. Query languages from different communities and individuals have been proposed. The World Wide Web Consortium(W3C) is a leading contributor in this field. We have discussed the different aspects of some selected XML query languages and reviewed the limitations of the selected query languages. As an outcome of our work, we have tried to recommend the necessary functionalities and requirements for a possible new query language.

CS-01-8
METHODOLOGY FOR CREATING APPLICATIONS BY USING JINI TECHNOLOGY
Aekkachai Kongkerd
Dr. Dencho N. Batanov
Jini is a distributed computing platform introduced by Sun Microsystems, Inc. in January 1999. A Jini system will allow systems or devices to enter and leave networks while the network environment remains stable. These devices can be used by clients or other services on the network. The device can itself be a client, a service, or both.

The Jini architecture is a Java technology-based system that allows new freedom in building distributed systems. Rather than assuming that the code that will be run on a processor is co-located with that processor. Jini technology makes aggressive use of the Java platform's ability to safely move code to allow a processor to receive objects from anywhere on a network.

Combined with a simple protocol that allows services, both hardware and software, to announce their availability, the Jini architecture allows the spontaneous construction of networks of services and clients. Combined with a programming model that allows the construction of reliable distributed services, Jini technology-based systems provide a simple, scalable, reliable way of constructing computing environments. The goal of this thesis is to provide the methodology for creating applications by using Jini technology.

CS-01-9
ADAPTIVE RESONANCE THEORY AND THE SELF-ORGANIZING MAP IN THAI CHARACTER RECOGNITION
Suriya Natsupakpong
Prof. Huynh Ngoc Phien
This study is concerned with neural networks. In particular, two unsupervised neural networks; Adaptive Resonance Theory (ART) and the Self-Organizing Map (SOM), used for the recognition of 44 Thai consonant characters. These characters are represented with four font faces, namely, AngsanaUPC, BrowalliaUPC, CordiaUPC, and EucrosiaUPC. The recognition process starts with converting an image of each character to a binary representation, then using a skeleton and normalization algorithm for preprocessing, and sending them to the concerned neural network. Moreover, two supervised neural networks; Learning Vector Quantization (LVQ) and Back Propagation (BP), are considered for the same purpose. From the application results, it was found that neural networks can be ranked in descending order from the highest accuracy rate to the lowest as follows: BP, LVQ, SOM, and ART. In addition, this study proposes an improved algorithm by incorporating the supervised learning in SOM. The results of this study show that this algorithm has the fastest training time and the accuracy rates in training set and testing set are 98.23% and 82.58%, respectively.

CS-01-10
OBJECT-ORIENTED DEVELOPMENT OF WEB SERVICES
Dujrudee Triyawatt
Dr. Dencho N. Batanov
As the next generation of Web applications, Web services receive supreme reputation with its significant advantages such as interoperability, just-in-time application, just-in-time integration, and industry support. In this study, the methodology to develop Web services applying object-oriented approach has been expressed as general guidelines for developers to follow.

Because Web services are emerged to serve the requirement of independent languages and independent environments, the core supporting technologies consist of the Extensible Markup Language (XML) for sharing data, the Simple Object Access Protocol (SOAP) for interacting with Web services, the Universal Discovery, Description and Integration (UDDI) for filling the discovery and description need, and the Web Services Description Language (WSDL) for defining services all of them are open, cross-platform standards.

This proposed methodology covers overall life cycle of software development. In analysis and design phases, object-oriented analysis and design is employed. Next, in implementation phase, the Web Services Object Model is applied in the Web services prototype. Finally, in test phase, the prototype is tested for validity and correctness.

CS-01-11
SECURITY OF MOBILE AGENT HOSTS - A MODEL FOR DETECTING HARMFUL INTENT OF A MOBILE AGENT
Padakandla Lakshmi Rao
Prof. Ramakoti Sadananda
The Mobile Agent Paradigm has been around for sometime now. It has lately attracted attention in the field of Internet Applications. The major concern in implementing this paradigm is the security threats an agent and the agent platform face from other agents and agent platforms. To some extent these issues have been addressed with regard to preventing attacks. For effective prevention, we need to predict attacks. Given the complexity of the software, such predictions are not straightforward.

In this work, a model has been developed to detect any harmful intent of an agent on the agent platform. The communication between the agent and the agent host is used as a parameter for this purpose. The various requests made by the agent on the agent platform are recorded in a database. The data forms an input to the Self Organizing Map. The resulting grouping of the data emerges into patterns. Locating patterns that are indicative of harmful intent and to detect the attack in real time is the main focus of this study. The Denial of Service attack of an agent on the agent platform has been considered for the testing phase of the model.

This model may be extended to perform an Intention Analysis of Mobile Agents. Such an approach may be helpful in alerting those responsible for Network Management on various kinds of threats likely to emerge from the worldly agents.

CS-01-12
CREATING A COLLABORATIVE WORKING ENVIRONMENT USING PEER TO PEER TECHNOLOGY: AIT AS A CASE STUDY
Sasiphan Nitayaprapha
Prof. Phan Minh Dung
The interpersonal communication and the data accessibility are primary factors effecting organization's decisions. Peer to peer technology has been receiving a great deal of attentions for over a year. The peer to peer network offers a number of benefits. One of them is the ability to harness the unused processing power of linked computers. Another benefit is that it allows users to set up working groups with the abilities to access to each other's disk storage. A case study is done in creating the collaborative working environment in AIT using peer to peer technology. A real time collaboration peer to peer Groove has been used to implement the concept of collaborative working environment. The proposed architecture allows users to collaborate with each other while they are geographically/authority-line apart as well as facilitates the organizational database accessibility.

CS-01-13
DIRECTORY ENABLED NETWORK USING JAVA NAMING AND DIRECTORY INTERFACE
Nguyen Thi Kim Hoa
Prof. Phan Minh Dung
Managing Networks is a challenging and demanding task. It becomes all the more complicated with large networks. It is then necessary to have management software for all devices as well as information about the networks. As of today, most network devices have their individual management modules, so management is decentralized. The future trend is towards centralizing the network management system. This calls for integrating all the network devices and maintaining a centralized database containing information about the network.

This study proposes a new mechanism for managing the networks by using Directory Enabled Network (DEN) architecture along with Java Naming and Directory Interface (JNDI). This mechanism is powerful enough to meet the demands of network management. DEN is a specification to store information in the form of classes in a Lightweight Directory Access Protocol (LDAP) Database. Using JNDI, the users can access the information via LDAP protocol.

This architecture has been implemented as a test phase in the Computer Science department network – Asian Institute of Technology, Thailand.

CS-01-14
OBJECT-ORIENTED DEVELOPMENT OF WIRELESS APPLICATIONS
Chonlada Tientanopajai
Dr. Dencho N. Batanov
Wireless applications are usually implemented by using a top-down approach as a structured programming that rarely designs the completed system would be without actually implementing the applications. Unlike the Object-Oriented approach, the design of the completed system could be modeled at a higher level. Any potential problems with the design can be fixed at this level without having to implement the applications. This study proposes the use of the Object-Oriented methodology for analysis, design, and implementation of wireless application system, based on a method named Object-Oriented Analysis and Design (OOAD) and the principles of Wireless Application Protocol (WAP). Initially, the problem domains of the wireless application system are defined for designing a model of the system. This model combines the complex navigation patterns with sophisticated behaviors to perform the mechanism of the wireless application system. Then analysis and design of the web-based online course registration, a case study of this thesis, are discussed. Finally, the case study of this thesis is implemented by using Java 2 Platform Micro Edition (J2ME).

CS-01-15
ACTION REPRESENTATION LANGUAGES AND PLANNING WITH INCOMPLETE INFORMATION FOR UNIX PROGRAMMING
Bui Hoai Thang
Prof. Phan Minh Dung
This thesis deals with planning problems in the UNIX domain. It studies the UNIX environment, and represents the UNIX domains in the first order logic. The thesis also represents UNIX commands as actions in an action representation language. Those actions are then used in planners to solve problems in the UNIX system automatically.

The thesis also builds a partial order planner, which uses the proposed actions to satisfy user requests. The built planner is not only able to handle universal quantification, conditional effect, but also to capture an agent's incomplete information about the world by extending the classical planner to handle information goals, as well as generate an executing plan in the presence of incomplete information by interleaving planning and execution.

INFORMATION MANAGEMENT

IM-01-1
IMPLEMENTING BUSINESS-TO-BUSINESS ELECTRONIC COMMERCE FOR THE TEXTILE INDUSTRY IN THAILAND
Yung Ching Yu
Prof. Phan Minh Dung
The textile and garment industry is one of the most important industries in the Kingdom of Thailand. In order to be part of the globalization process, textile industries in Thailand have to decide how to approach to this trend using the web technology that is already available. This thesis identifies the need of implementing business-to-business electronic commerce for textile industries in Thailand.

Since the textile industry is already a mature business, the production process, delivery channels, management and marketing strategies have already been defined and proved for their worthiness. But to be able to compete with other textile companies, one must innovate. The emerging B2B e-commerce improves and will eventually replace the traditional marketing and distribution channel. The Internet technology can do a lot more for a textile company other then placing orders online. Organizations worldwide are embracing the use of electronic commerce at an ever-increasing rate. Most organizations view electronic commerce as means of increasing efficiency and productivity. In the area of business, these technologies have made globalization of the business operations a reality.

The objectives of this thesis are; first, to determine the purpose, limitations, and benefits of using B2B e-commerce in the textile industry, and also study the problems the industry might encounter in Thailand. Next, this thesis designs and implements a B2B system prototype for textile industry based on the web technology discussed in the contents.

Thesis focuses on implementing a B2B e-commerce for the Thai Textile industry. The system starts from reviewing the existing technology and business trend used for implementation. Based on the literature review, develops a business plan and technology plan for implementation. In the plans, it assumes to establish an imaginary company that does the implementation. Next, using Thai Farmer's Bank's Internet Banking system as case study, discuss the system and the technology used. Meanwhile, describes how the online payment system can be integrated into B2B electronic commerce. Finally, implements a working prototype with the technologies and programming tools discussed in the thesis.

Due to the scope and time constraints, the contents in this thesis are based on idealized economic environment and simplified business processes. However, the challenges of textile industry innovation among buyers and producers could be considered for further development.

IM-01-2
A COMPARISON OF SELECTED TRAINING ALGORITHMS FOR RECURRENT NEURAL NETWORKS
Aree Chairatanatrai
Prof. Huynh Ngoc Phien
Recurrent Neural Networks (RNNs) are one type of neural networks in which self-loops and backward connections between nodes are allowed. One of the consequences of this fact is that dynamic behaviors not possible with strictly feed-forward networks, such as limit cycles and chaos, can be produced with recurrent networks. To gain further insight into RNNs, this study focused on the network performance of two fast on-line algorithms, namely Error Back Propagation and Exponentially Weighted Least Squares (EBP-EWLS), and Accelerating Convergence using Approximated Gradient (ACAG).

To evaluate the performance of the two aforementioned algorithms in the forecasting problem, three types of data, namely daily stock prices, quarterly export and gross domestic product, and daily stream flow, were considered.

In terms of the efficiency index, root mean squared error, mean absolute deviation, and maximum relative error, both algorithms perform very satisfactorily, with the EBP-EWLS being slightly better. However, it takes more computation time than the ACAG does.

Based upon the results obtained, a new algorithm was developed by combining three different methods: Error Back Propagation, Error self-recurrent, and Recursive Least Squares methods. From its applications to the above data sets, it was found that the new algorithm is considerably faster than the EBP-EWLS, at the same time, it can eliminate the very sensitive parameter in the ACAG algorithm. Moreover, this new algorithm performs much better than the ACAG, and reaches almost the same performance as the EBP-EWLS.

Finally, a simple analysis on the complexity of the RNNs was also carried out. It was found that as the number of hidden nodes increases, both the storage and computation time increases. With the same number of nodes added to hidden layer or the input.

IM-01-3
MACHINE LEARNING FOR MARKET SEGMENTATION
Rujiphorn Techathaweerit
Dr. Peter Haddawy
Market Segmentation is the process of identifying groups of customers that have similarities in characteristics or similarities in needs. Segmenting the market can help firms increase profits by better targeting advertising of products and services. Customer preferences are one of the most attractive bases for segmentation. The main problem is to apply appropriate algorithms to segment customers based on preferences.

In this thesis, techniques from machine learning and collaborative filtering are integrated to develop a comprehensive methodology for segmenting customers based on their preferences. The effectiveness of the approach is evaluated on a database of movie preferences. A particular similarity measure technique from collaborative filtering is selected for calculating the similarity between users. The clustering algorithms are responsible for clustering the users based on the similarity. Finally, Bayesian multi nets and decision trees are used for generating predictive models of the segments. In addition, decision trees are used for creating descriptions of the segments.

IM-01-4
DEVELOPING SOFTWARE TO SUPPORT THAI HANDWRITTEN TEXT-BASED COMMUNICATION USING MOBILE PHONES
Prin Nongnual
Dr. Dencho N. Batanov
With an explosive growth of wireless data and the Internet, Wireless Application Protocol (WAP) has been introduced as a bridge between wireless networks and the Internet. As a result of this, mobile Internet has been created as a new exciting information service. Most of mobile Internet applications are needed to input data on a mobile phone screen by using a small keypad. With the limitation of the keypad, the mobile users would use a lot of time to write characters to display on the screen.

To solve the above problem, the study has merged the recognition system with WAP technology to improve the speed of typing on the phone keypad. It is to develop software to support Thai handwritten text-based communication using a mobile phone. This system concentrates on Thai characters. It allows mobile users to draw Thai handwritten characters on a mobile phone screen. The system then uses WAP technology to send these characters from the mobile phone to the server for recognition. After that, Thai print characters will be sent back and displayed on a mobile phone screen. As a result of this system, user's time will be saved and mobile Internet applications access will be easier.

IM-01-5
A FURTHER STUDY ON BACKPROPAGATION AND B-SPLINE NEURAL NETWORKS IN FILTERING AND FORECASTING PROBLEMS
Nguyen Duc Anh Kha
Prof. Huynh Ngoc Phien
Artificial Neural Networks are applied widely in many fields in recent years in filtering and forecasting non-linear time series data. In this study, two new neural network models are considered: the Backpropagation and the B-spline models. Two computer software packages based on these two models were implemented to assess the capabilities of these models in filtering and forecasting of time series data. Moreover, for the Backpropagation model, two new algorithms were employed to improve the convergence speed of the model and the Bayesian Information Criterion (BIC) was employed to find the optimal network structure.

Two data sets, one with discharge and water level of the Thu Bon River, Vietnam, and the other with discharge of the Mae Klong River, Thailand, were used to evaluate the efficiency of the software packages. The results obtained from these models show that both Backpropagation and B-spline models can be applied satisfactorily in filtering and forecasting problems. Moreover, the Backpropagation model can achieve a higher accuracy than the B-spline model, although it requires a longer computation time.

IM-01-6
A COMPARISON OF MCDM TECHNIQUES FOR PRODUCT RECOMMENDATION
Kanokporn Klangboonkrong
Dr. Peter Haddawy
Recently, e-commerce has become popular and competition in the world of business-to-customer electronic commerce has intensified. It is more important than ever to attract business and retain customers. Personalization is involved for customizing some features of a product or service in order that the customer enjoy more convenience, low cost, or some other benefit.

Many of the personalized Web sites use recommender system to help their customers find product to purchase. Computer-Assisted Self-Explication (CASE) is a personalization technology that uses knowledge about users and products to generate recommendations. The recommendations can be improved by utilizing MCDM techniques.

In this study, mobile phone recommender system has been developed for implementing CASE and MCDM methods – SMART and AHP. The system users are required to evaluate the satisfaction of the performance of both SMART and AHP. A majority of them has considered that SMART provides higher quality recommendations than AHP.

IM-01-7
A COMPARISON OF JAVA AND MICROSOFT TECHNOLOGIES IN DEVELOPING AN INTERNET BANKING SYSTEM
Kanokwan Atchariyachanvanich
Prof. Phan Minh Dung
Internet banking is the process by which bank customers may perform banking transactions electronically without visiting a brick-and-mortar bank branch. Instead, they can access the banking services through their bank's web site using a standard web browser. The existing Internet Banking was developed from several technologies such as Perl, CGI, Java, and Microsoft. However, in the developer's point of view, some of them might be developed by utilizing inappropriate technologies. Some might be developed by the integration of different technologies, and some technologies might be suitable for Internet banking system, but some might not.

Therefore, this research is to study the technologies of Java and Microsoft in order to develop the Internet banking system. In addition, the comparative study is done by developing the prototypes of Internet banking system by using Java and Microsoft Technologies in order to analyze the strengths and weaknesses of both technologies. The criteria for comparing these technologies are security, performance, portability, and the development life cycle phase.

IM-01-8
ASSESSMENT OF WEB COMMERCE-INTERFACE DESIGN USING SELF-ORGANIZING MAPS
Siti Nurjayanti
Prof. Ramakoti Sadananda
Despite the rapid development of the Web as a tool for business, some problems have arisen in accessing the Web. At first impression, the web interface should be well-designed based on user needs in order to access effectively and conveniently. Little research has been done on web assessment, especially on web design. There exists a need to develop new approaches to evaluate the Web. Using Self Organizing Map (SOM), is carried out to group Webs, specifically agricultural commerce Web sites according to design similarity. Input data consists of user evaluation produced from a survey of one hundred respondents using nine criteria on web design. The criteria are ease of use, currency, presentation, navigation, assistance, security, page loading, accuracy, and content. The SOM was run with varying parameters to obtain an optimal map and to study the effect of the parameters. The techniques of Web clustering and interpretation of the maps are described in detail. The results illustrate that selected webs are typically user friendly. About 20%-30% of the webs satisfy user needs. Improvements are still needed in some elements, such for currency, accuracy, navigation, security, and assistance.

IM-01-9
PUSH TECHNOLOGY FOR MOBILE COMMERCE
Piyanan Opasanon
Dr. Vatcharaporn Esichaikul
As mobile devices such as mobile phones, PDAs, and handheld computers are becoming more popular, they offer new opportunities to introduce mobile commerce applications and services to end users. These include developing new information processing techniques, adapting wired e-commerce applications to wireless ones, and developing novel mobile commerce applications. Push technology is one wired e-commerce technique that can be adopted for use in mobile commerce to deliver data to end-users without any requests from the users. However, there are some problems with push technology for mobile commerce that should be addressed, such as irrelevant information, redundant information, and lack of interaction. Moreover, the characteristics of mobile commerce systems such as limited network bandwidth, limited screen size, and mobility warrant new approaches to their design and implementation.

As a result, this thesis proposes to deploy the concept of push technology for wireless Internet by adopting personalization techniques to find relevant information based on users' preferences. To illustrate the proposed system, one application is chosen to implement is pushing news to end-users. Three techniques are used in this proposed system. Firstly, the personalization is divided into two sub-engines: a scoring engine and a learning engine. For extracting the users' preference, the experiment is conducted to proof reading time spent, see if it correlates with the explicit rating of preference. Secondly, due to the limitations of mobile devices, the one technique used to summarize the push content is automatic abstracting by sentence extraction in a statistical approach. Finally, the wireless push technology is based on WAP-based push architecture from WAP forum that can be interactive.

IM-01-10
MANAGING THE COLLABORATIVE WORK ON PROJECT DEVELOPMENT IN AN ORGANIZATION USING WEB COMPUTING ENVIRONMENT
Wapee Panompornpanich
Dr. Dencho N. Batanov
Since most of works in any organizations nowadays are collaborative, which means that team members work in different places, using Web Environments for communicating will be more flexible and comfortable. A methodology for ensuring the collaborative work on project development in an organization using Web Computing Environment has been introduced and developed in this study.

The study uses Object-Oriented principles for analyzing, designing, and implementing this methodology. The proposed methodology integrates all necessary functions consisting of eleven components for the collaborative work in one framework. The components are Project Details, Project Topics, To do List, Workflow, Gantt Chart, Email Services, Virtual Conference, Chat, Repository, Report, and Administration. The collaborative work in this study is also determined into two issues, which are

project management and collaboration among team members. In addition, the study uses XML format to provide the interoperability of the organization documents using a flexible, open, standards-based formant. Finally, the demonstrative application is implemented for illustrating some necessary components of the methodology as developed in this study.

IM-01-11
E-COLLABORATIVE TELEMEDICINE
Siriwan Suebnukarn
Dr. Vatcharaporn Esichaikul
In most countries public health is stepping towards an economic crisis. Extensive competition thus challenges healthcare organizations to redesign their business. E-collaborative telemedicine has the potential to offer new distribution channels to healthcare services. At present, there are several applications of collaborative telemedicine already in the market. However, most of the previous work has focused on either synchronous (all the physicians interact simultaneously) or asynchronous (non-simultaneous interaction) collaborative communication, and designed only for intra-hospital communication through LANs. The challenge now is to extend these systems on a national or continental Health Care System, which includes not only a few big hospitals but also several regional and local ones. The main contribution of this work is in building the system for teleconsultation through synchronous and asynchronous collaborative communication. The system is a Java client/server combination, which can be used for teleconsultation over the Internet or local networks. The system has been designed with structure and technologies that make it platform-independent and user-friendly. Finally, it should be pointed out from the prototype implementation that the reduction of the consultation time and the patient waiting time for operation gives immediate feedback of the augmented quality of healthcare service.

IM-01-12
RELATIONSHIPS BETWEEN BERNSTEIN, CHEBYSHEV AND LEGENDRE MODELS
Sathasivam Amirthalingam
Prof. Huynh Ngoc Phien
This study was carried out with the main objective of establishing the relationships between Bezier, Chebyshev and Legendre curves. These relationships are obtained using the polar form approach with mathematical derivations. They can serve as convenient ways to convert a curve in a given form into the other two remaining forms.

- It was found that- the control points of a curve given in one of the forms Bezier, Chebyshev and Legendre, can be expressed as affine combinations of the control points of in each of the remaining forms for the rational case. This result is not true for non-rational curves.
- The control points of a Chebyshev or Legendre curve do not provide any hint about the shape of the curve defined by them. This is completely different from the case of Bezier curves.
- In view of these results, it seems that when a curve is given in the Chebyshev or Legendre form, it should be converted into the Bezier form so that its shape can be roughly figured out before any drawing is carried out.