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Lecturer

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RESEARCH INTEREST

Wireless Networks, Distributed Computing, Network Security, Cyber-physical Systems

EDUCATION

- Oct, 2009 **B.Sc. Engg. (CSE)**
Bachelors of Science, Computer Science and Engineering
Bangladesh University of Engineering and Technology, Dhaka.
CGPA: **3.92/4.00**
Positioned: **3rd** (class size 125)
- Sept, 2004 **Higher Secondary Certificate Examination**
GPA: **5.00/5.00**
- July, 2002 **Secondary School Certificate Examination**
GPA: **4.88/5.00**

AWARDS AND SCHOLARSHIP

- Department Merit Scholarship, for excellence in academic result of in BS studies
- Dean's List Award, for students whose yearly CGPA exceeds 3.75
- Dhaka Education Board Scholarship in the Higher Secondary Certificate examination.

PUBLICATION

- **S.M. Rifat Ahsan**, Mohammad Saiful Islam, Naeemul Hassan, Ashikur Rahman, "Exploiting Packet Distribution for Tuning RTS Threshold in IEEE 802.11", 25th Queen's Biennial Symposium on Communications. Accepted, Kingston, Canada, 2010.
- **S.M. Rifat Ahsan**, Reaz Ahmed, Tanvir A. Amin, "Efficient Multi-hop Sybil Resistant DHT", 2010 (In preparation).
- Shegufta B. Ahsan, **S.M.R Ahsan**, "Wireless Sensor Network towards the Industry Environment Monitoring", 2010 (In preparation).

DISSERTATION

- S.M Rifat Ahsan, Saiful Islam, Naeemul Hassan, "*Tunable parameters of IEEE 802.11 based Ad-Hoc Network*", BS Thesis, Bangladesh University of Engineering and Technology, September 2009

RESEARCH EXPERIENCE

- **Sybil Resistant P2P Network**

Main contribution is a sybil-resistant Distributed Hash Table, where the routing algorithm for an honest node can effectively bypass the sybil identities. It doesn't suffer from unreasonably large routing tables or suboptimal routing paths. We have also presented a layered architecture of a distributed admission control and maintenance scheme for a peer to peer network.

- **Tunable Parameters of IEEE802.11 based Ad hoc Network, BS thesis**

Worked on Tunable parameters for IEEE802.11 based ad hoc network with Dr. A.K.M Ashikur Rahman. Network performance changes with the tuning of the parameters of MAC layers. We worked to find an adaptive way to set the RTS Threshold value.

- **Wireless Sensor Network Application : Industry**

The concept of this project is to ensure the environmental security of Industrial organizations. Here, we focused on to detect the presence of different types of toxic gases. In addition, we concentrate on maintaining perfect level of temperature and light in a system. We developed a communication protocol for transferring information of different types of sensors and our on-board implementation was successful.

- **Scalable Video Streaming in Wireless Network**

Working with Dr. Md. Humayan Kabir on secure scalable video streaming in wireless networks. Our aim is to build an efficient and secure protocol for video streaming to heterogeneous clients over time varying wireless communication links.

- **VANETTM: Vehicular Ad-hoc Network Based Travel Mate**

Joined in a project group of Vehicular Ad-hoc Network under Chowdhury Sayeed Hyder and Devised a protocol, analyzed performance through on-board implementation of Vehicular Communication.

- **Adversarial Search on Sixteen Chips**

Researched on Adversarial Search of a two player zero-sum game named "Sixteen chips", a local version of Checkers.

PROFESSIONAL EXPERIENCE

Lecturer (October,2009- Present)

Dept Of Computer Science and Engineering (CSE)

Bangladesh University of Engineering and Technology (BUET)

- Theory courses instructed: Microprocessor and Microcontrollers. (Along with course web site maintenance and course coordination)
- Laboratory courses instructed: Structured Programming Language, Compiler, Microprocessor and Microcontrollers , Wireless Networks, Computer Interfacing, Assembly Language
- Designed laboratory materials for Lab course: CSE 454, Wireless Networks Sessional , CSE311 Compiler Sessional, CSE316 Microprocessor and Microcontrollers.
- Supervised undergraduate students in various Computer interfacing, C/C++ projects.

Instructor, Bangladesh Korea Information Access Center, BUET, May2010 - Present

Course material preparation and Instruction : Web Design and Application Development

SELECTED PROJECTS

A brief list of selected projects completed during BS studies is included in Appendix A

TECHNICAL SKILL

Language	C, C++, C#, JAVA, J2ME, Matlab, UNIX shell scripting, PHP, HTML,CSS,PL/SQL, Prolog, Assembly, Lex, Yacc, TCL/TK
Simulator	NS2, Packet Tracer, PSpice, Verilog
Development Tool	NetBeans , Borland JBuilder , Microsoft Visual Studio , GCC, Dream Weaver
Modeling	UML, ERD, Photoshop, Illustrator
Operating Systems	Windows , Linux (Ubuntu, Fedora), VMWare
Circuit Design Tools	Quartus II 9.0, MicroWind
Documentation Tools	Latex, MS Word
RDBMS	Oracle, PostgreSQL, MySQL, MS SQL Server, MS Access, , Java Persistence Query Language (JPQL)
Hardware and Interfacing Tools	Mica-2 Motes, Arduino boards, AVR Microcontrollers, FPGA Boards, XBee Transceiver, RFM Radio Module, Bluetooth, Cisco Router, Switch, 802.11 Access Points.

REFERENCES

Dr. A.K.M Ashiqur Rahman

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APPENDIX A: LIST OF SELECTED BS PROJECTS

OSI Layer Implementation: Effectuated Physical Layer, Data Link Layer and Network Layer of Open System Interconnection in JAVA using Java Communication API among different modules. Link State Routing was used as routing algorithm adhering to all five steps carefully. To calculate shortest path among nodes in network, Dijkstra's Shortest Path Algorithm was implemented. The whole system was evaluated in line, star and ring topology.

Automated Solution for Telecom Company: Surveyed a PSTN and GSM based company RanksTel Bangladesh Ltd. and, designed and implemented an Automated Sales and Distribution Solution. All steps of Software Engineering like, Requirement Discovery and Modeling, Usecase Analysis, Identifying Classes, Drawing Class Diagram from Collaboration and Sequence Diagram, Finding flows from State-Chart, Input-Output Design and User Interface Design were followed by. The solution was implemented in PHP.

Visualization of BUET: Designed 3D Model of BUET Campus using SketchUp and successfully finished that project. All the models were accepted for Google Earth 3D Layer by Google and can be found at BUET Buildings Collection.

Prison Management System: Penitentiaries in our country is not automated and entangled with lots of mismanagements. As a Database project, we decided to focus over this problem and proposed An Semi-Automated Prison Management System to simplify administrative works and manage prisoner's routine more easily. We used Visual C# to design user interface and Oracle 10.0i to maintain database .

Operating System: Implemented and solved Multiple Barbers Problem, Lock and Condition Variables, Input-Output, Thread, Mutex and two System Calls (Read and Write) in Nachos.

Image Recognition: As a project of Pattern Recognition, we developed a Image Recognition Software which employed Logarithmic approach to reduce time constraint using MATLAB.

Computer Graphics: Using OpenGL, created model of "Jatiyo Smriti Shoudho". Also, designed "Central Cafeteria of BUET" with Camera, Lighting, Sheding, Texturing and Animation.

Compiler: Capable of resolving Recursive Function Calling, a compiler was developed using lex and yacc, which used hash-based symbol table to look up keywords.

Automated Travelling : As an extension of Vehicular Ad-hoc Network (VANET) research, an intelligent traffic obserever was designed and implemented by Integrated Circuit which could transmit the information about traffic and mishaps in surrounding areas to nearby base receivers so that the information can be propagated to distant areas. Two kinds of communication protocol; Car to Car and Car to Base Station were designed for this purpose.

Implementation of 32-bit Microprocessor in FPGA Board: As a Very Large Scale Integration (VLSI) Project, a 32-bit Microprocessor with Memory was designed and implemented using Field Programmable Gate Array.

Digital System Design: A Micro program Controlled 4-bit Microprocessor with Branch Prediction capability, 4-stage Pipelining, able to perform 28 instructions, was designed meticulously according to Three BUS Architecture and also implemented in circuit board. It had separate Data and Instruction RAM.

Digital Oscilloscope: Designed and implemented a Digital Oscilloscope [-10v-10v] with high precision as an Electronic project.