

Shameem Ahmed

Contact Information

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Education

- **University of Illinois at Urbana-Champaign, IL, USA**
Ph.D. in Computer Science (Fall 2007 – present) (In progress)
Advisor: Professor Klara Nahrstedt
- **Marquette University, Milwaukee, WI, USA**
MS in Computer Science (Fall 2004 – Summer 2006)
Thesis: Self-healing for Autonomic Pervasive Computing
Advisor: Professor Sheikh Iqbal Ahamed
CGPA: 3.85/4.00
- **Bangladesh University of Engineering and Technology, Dhaka, Bangladesh**
B.Sc. in Computer Science and Engineering (2003)
Thesis: Dynamic Programming Based Optimal Algorithm for DNA Strand Alignment
Thesis Advisor: Professor Muhammad Masroor Ali
CGPA: 3.94/4.00

Research Interests

Wireless Networking & Mobile Computing, Distributed Systems, ICT for Developing Regions

Honors and Awards

- Sohaib and Sara Abbasi Fellowship, UIUC (2007-2008)
- 2nd Place, Building Internet Television (IPTV) System Competition (2008)
- Marquette Research/Teaching Assistantship (2004-2006)
- Travel and Accommodation Grant, Microsoft Academic Days, Canada (May 2005)
- Tau Beta Pi Analytical Problem-Solving Module Certified (2005)
- Personal Software Process (PSP) Certified (2007)
- Dean's Award, BUET, in all semesters of undergraduate study
- Runner Up, Nationwide Programming Aptitude Test (2001)
- 9th, ACM International Collegiate Programming Contest, Dhaka Regional site (2001)
- Runner Up, the 1st Intra-BUET Programming Contest (1999)
- 13th in the order of merit (out of approximately 150,000 students), SSC exam. (1994)
- Prime Minister's Award for Excellence of Merit, SSC exam. (1994)
- Lab-in-charge, Ubicomp Lab, MSCS department, Marquette University (2004-2006)
- Judge & Problem Setter, National Collegiate Programming Contest, Bangladesh (2002)

Publications

Journal Publications:

1. **Shameem Ahmed**, Moushumi Sharmin, and Sheikh I. Ahamed, "Ubi-App: a ubiquitous application for universal access from handheld devices," Special Issue of Springer International Journal Universal Access in the Information Society, Vol 7(4), 2008.

2. **Shameem Ahmed**, Moushumi Sharmin, and Sheikh I. Ahamed, "ETS (Efficient, Transparent, and Secured) Self-healing Service for Pervasive Computing Applications," *International Journal of Network Security*, Vol 4(3), May 2007, pp. 271-281.
3. Moushumi Sharmin, **Shameem Ahmed**, and Sheikh I. Ahamed, "Design and Implementation of MARKS (Middleware Adaptability for Resource Discovery, Knowledge Usability and Self-healing) Middleware for Pervasive Computing Environments," *Ubiquitous Computing and Communication Journal*, Volume 3, 2007.
4. Sheikh I. Ahamed, Moushumi Sharmin, **Shameem Ahmed**, Munirul Haque, and Ahmed J Khan, "Design and Implementation of a Virtual Assistant for Healthcare Professionals Using Pervasive Computing Technologies," *Journal Springer e&i*, vol 123(4), Apr 2006.
5. Sheikh I. Ahamed, Moushumi Sharmin, **Shameem Ahmed**, Michael J. Havice, and Suresh Anamanamuri, "An Assessment Tool for out of Class Learning using Pervasive Computing Technologies, *Information: An International Journal*, Vol 8(5), Sep 2005.
6. Moushumi Sharmin, **Shameem Ahmed**, and Muhammad Masroor Ali, "Dynamic Programming Based Optimal Algorithm for DNA Strand Alignment," *Journal of Computer Society of India* (2004).

Conference/Workshop Publications:

7. **Shameem Ahmed**, Thadpong Pongthawornkamol, Klara Nahrstedt, Matthew Caesar, and Guijun Wang, "Topology Aware Optimal Task Allocation for Publish/Subscribe Based Mission Critical Environment," *MILCOM 2009*, Boston, USA, Oct 2009.
8. **Shameem Ahmed**, Sheikh I. Ahamed, Moushumi Sharmin, and Munirul Haque, "Self-healing for Autonomic Pervasive Computing," *Proceedings of the 22nd Annual ACM Symposium on Applied Computing (ACM SAC)*, Korea, Mar 2007.
9. Thadpong Pongthawornkamol, **Shameem Ahmed**, Akira Uchiyama, Klara Nahrstedt, "Zero-knowledge Real-time Indoor Tracking via Outdoor Wireless Directional Antennas", to appear in *IEEE PerCom 2010*. (Acceptance rate: 12%)
10. Ryo Kawaguchi, **Shameem Ahmed**, Aukrit Unahalekhaka, Ang Pan and Roy Campbell, "A Market Anywhere: Establishing an SMS-based Virtual Market in Developing Regions", *Globi-comp 2009*, a workshop in conjunction with *UbiComp 2009*, Florida, USA, Sep 2009.
11. **Shameem Ahmed**, Moushumi Sharmin, and Sheikh I. Ahamed, "PerAd-Service: A Middleware Service for Pervasive Advertisement in M-Business," *Proceedings of the 29th Annual International Computer Software and Applications Conference (COMPSAC 2005)*, Scotland, Jul 2005.
12. **Shameem Ahmed**, Moushumi Sharmin, and Sheikh I. Ahamed, "Knowledge Usability and Its Characteristics for Pervasive Computing," *Proceedings of the 2005 International Conference on Pervasive Systems and Computing (PSC-05) in conjunction with the 2005 International Multi-conference in Computer Science and Engineering*, USA, Jun 2005.
13. **Shameem Ahmed**, Moushumi Sharmin, and Sheikh I. Ahamed, "A Smart Meeting Room with Pervasive Computing Technologies," *Proceedings of the 6th ACIS international Conference on Software Engineering, Artificial Intelligence, Networking, and Parallel/Distributed Computing (SNPD 2005)*, USA, May 2005.
14. **Shameem Ahmed**, Moushumi Sharmin, and Chowdhury M. Rahman, "A Generic

Thinning Algorithm with Better Performance,” Proceedings of the 5th International Conference on Computer and Information Technology (ICCIT 2002), Bangladesh, Dec 2002.

15. Moushumi Sharmin, Sheikh I. Ahamed , and **Shameem Ahmed** , “A Risk-aware Trust Based Secure Resource Discovery (RTSRD) Model for Pervasive Computing,” Proceedings of the 2nd IEEE International Workshop on Web and Pervasive Security of PerCom, Hong Kong, March 2008.
16. Moushumi Sharmin, **Shameem Ahmed**, Sheikh I. Ahamed, and Haifeng Li, “SSRD+: A Privacy-aware Trust and Security Model for Resource Discovery in Pervasive Computing Environment,” Proceedings of the 30th Annual International Computer Software and Applications Conference (COMPSAC 2006), USA, Sep 2006.
17. Moushumi Sharmin, **Shameem Ahmed**, and Sheikh I. Ahamed, “UbiComp Assistant: an Omnipresent Customizable Service using MARKS,” Proceedings of the 21st Annual ACM Symposium on Applied Computing (ACM SAC 2006), France, Apr 2006.
18. Moushumi Sharmin, **Shameem Ahmed**, and Sheikh I. Ahamed, “MARKS (Middleware Adaptability for Resource Discovery, Knowledge Usability and Self-healing) for Mobile Devices of Pervasive Computing Environments,” Proceedings of the 3rd International Conference on Information Technology: New Generations (ITNG 2006), USA, Apr 2006.
19. Moushumi Sharmin, **Shameem Ahmed**, and Sheikh I. Ahamed, “An Adaptive Lightweight Trust Reliant Secure Resource Discovery for Pervasive Computing Environments,” Proceedings of the 4th Annual IEEE International Conference on Pervasive Computer and Communications (PerCom 2006), Italy, Mar 2006.
20. Moushumi Sharmin, **Shameem Ahmed**, Sheikh I. Ahamed, Munirul Haque, and Ahmed J Khan, “Healthcare Aide: Towards a Virtual Assistant for Doctors, Patients, Nurses and Resident Doctors Using Pervasive Middleware,” Proceedings of the 1st Workshop on Ubiquitous and Pervasive Health Care (UbiCare 2006) in conjunction with Fourth Annual IEEE International Conference on Pervasive Computer and Communications (PerCom 2006), Italy, Mar 2006.
21. Moushumi Sharmin, **Shameem Ahmed**, and Sheikh I. Ahamed, “SAFE-RD (Secure, Adaptive, Fault Tolerant, and Efficient Resource Discovery) in Pervasive Computing Environments,” Proceedings of the IEEE international Conference on Information Technology (ITCC 2005), USA, Apr 2005.

DBLP: <http://www.informatik.uni-trier.de/~ley/db/indices/a-tree/a/Ahmed:Shameem.html>

Industry Experience

Software Engineer (July 2006 – Aug 2007)

Direct Supply, Milwaukee, WI, USA

- Lead Software Engineer for B2B applications being developed using Microsoft BizTalk Server 2004, Microsoft BizTalk Server Accelerator for HL7, Visual Studio.Net and C#.

Software Engineer and Information Analyst (2002-2003)

Advanced Chemical Industries (ACI) Ltd, Dhaka, Bangladesh

- Collaborated on design and implementation of a business optimization model considering many product and customer constraints.

Software Engineer and Managing Partner (2001-2002)

Krypton Soft, Dhaka, Bangladesh

- Collaborated on design some software like Temporal Edu-care Online, Web-Based Scheduling Service, etc.

Research and Teaching Experience

Research Assistant under Prof. Klara Nahrstedt (Fall 2008– present)

MONET Lab (Multimedia Operating System and Networking Group)

Department of Computer Science, University of Illinois at Urbana-Champaign

URL: <http://cairo.cs.uiuc.edu/>

Research Assistant under Prof. Sheikh Iqbal Ahamed (Aug 2005 – May 2006)

Ubicomp Lab, MSCS department, Marquette University

URL: <http://www.mscs.mu.edu/~ubicomp/>

Instructor (Jan 2006 – May 2006)

MSCS department, Marquette University

Teaching Assistant (Aug 2004 – May 2005)

MSCS department, Marquette University

Lecturer (Mar 2003 – Dec 2003)

CSE department, Bangladesh University of Engineering & Technology (BUET)

Lecturer (Jan 2003 – Dec 2003)

CSE department, University of Asia Pacific (UAP)

Course Tutor (Apr 2002 – Oct 2002)

Institute of Information and Communication Technology

Bangladesh University of Engineering & Technology (BUET)

Mentoring Experience

Co-supervision of Undergraduate Student

(Project: Social Networking for Developing Regions using Cellular Platform)

1. Ryo Kawaguchi (Summer 2008 – present)
2. Ye Ruan (Summer 2008 – present)
3. Ang Pan (Summer 2008 – present)
4. Aukrit Unahalekhaka (Spring 2009 – present)

Selected Projects

Wireless Data Dissemination Service in Fire-Fighting Situation (Bluetooth, Symbian OS, Carbide.c++, Nokia N95)

- Designed and implemented a wireless data dissemination service for mobile devices to make it useful during fire-fighting.
- Experimented and evaluated the system at Illinois Fire Service Institute

Spectrum Width Adaptation Technique for Improving the Throughput of Soft Real-time Flows in Multi-channel Wireless Network (IEEE 802.11, wireless physical layer)

- Developed a low cost system to deploy in WLAN. This system helps to improve the throughput of non-realtime flows while maintaining the priority of the realtime flows for multi-radio/multi-channel wireless network.
- Applied a distributed mechanism to adapt the channel width of IEEE 802.11 dynamically

Optimal Task Allocation (OTA) for Publish/Subscribe-based Mission Critical Environment (IEEE802.11, NS-2, C++)

- Developed a technique to map publish/subscribe communication model to OTA problem in mission critical environment, considering a formulation in which tasks are performed and distributed across nodes in a manner that maximizes the aggregate network-wide utility.
- Implemented an on-line algorithm, protocol, and network architecture for carrying out this allocation, given an arriving set of tasks as inputs.
- Developed techniques to identify availability of nodes and their resources, as well as the feasibility of executing particular tasks in various nodes
- Exploited Hungarian method and Rectangular Assignment algorithm to find OTA solutions under the systems current resource constraint conditions
- Assigned tasks to the appropriate nodes via information dissemination protocols
- Updated the network resource allocation and task assignment based on the current position and mobility of nodes.

In-Vehicle Sensor Data for Driving Behavior Profiling and Recognition (TinyOS, Crossbow MicaZ, NesC, MTS420CC Sensor Board, WEKA)

- Developed a low-cost, zero-installation system to deploy in cars. This system helps to infer the driver safety using simple GPS unit and accelerometer.
- Applied data mining techniques to the accelerometer data as a method of recognizing individual drivers. Each driver can be "fingerprinted" with acceleration and braking patterns. Such capability can be used, for example, for theft detection and prevention.

Miracle Internet Television (IPTV) System (Linux, C, QT, TCP, UDP)

- Developed an IPTV system named Miracle IPTV.
- Miracle IPTV provides several features including audio-visual synchronization of a media file, a user-friendly GUI to enable users to select, play, pause, FF, Rewind, restart, etc., and smooth switching between different viewing options.
- Won the 2nd prize in the competition.

Visualization Framework for Online Social Networks (C#.Net, Processing)

- Developed an interactive visualization framework that allows users to explore their history of interaction with online friends.
- This framework allows users to reflect on their online presence, examine interactions with friends, and adjust online behavior as desired.
- Users construct their own visualization by selecting variables corresponding to interaction traces and how these map to visual dimensions.

Ubicomp Assistant for PDAs and Smartphones (.Net, SQL)

- Developed Ubicomp Assistant (UA), a customizable service for PDAs, Smartphones, and laptops.
- UA provides different types of users (e.g. conference attendees, pollster, doctors, teachers, students, fun-lovers, etc.) with a variety of seamless capabilities (wireless file transfer, chat, note taking or surveying).

Healthcare Aide for handheld devices (C#.Net, IEEE802.11, SQL)

- Developed Healthcare Aide that can be used as a virtual assistant for physicians, patients, and nurses.
- Authenticated doctors can easily and securely maintain all necessary patient information.
- Patients can also easily interact (e.g. doing chat) with doctors and nurses on the fly.

Enhanced Learning in 2010: Pervasive Computing in and out of the classroom (C#.Net, SQL)

- Developed a wireless assessment tool, which enables instructors to create, edit, distribute, and grade exams and allows students to take those on the fly.

MARKS (Middleware Adaptability for Resource Discovery, Knowledge Usability, & Self-healing) (.Net)

- Supervised to design and implement a middleware named MARKS, a ubiquitous computing middleware that guarantees optimum usage of capabilities of mobile devices.

SSRD: Simple and Secure Resource Discovery (C#.Net, Socket Programming, TCP/IP)

- Designed SSRD model which uses a trust based service-oriented adaptive security mechanism to provide security whenever needed without degrading the device's performance.

Bangla Optical Character Recognition (OCR) (C++, Neural Network)

- Created code to retrieve Bangla Unicode characters into text format from optical format.
- This software efficiently employs the concepts of line and word detection, zoning, character separations and recognition, skewness correction, thinning, scaling, and neural network.

OCROS: a UNIX like Operating System (C++, Assembly Language)

- Designed and implemented OCROS, a small scale multitasking OS for the IBM 80x86 hardware platform.
- OCROS consists of the Basic OS Kernel, Memory management Servers, System Shell, Inode based File System, and User Programs.

NetX: an Implementation of the OSI Network Layer (MFC using VC++, Socket Programming)

- Implemented OSI network layers, allowing communication of multiple computers through serial ports.
- Built FTP and chat application using lower-level APIs.

Temporal Edu-care Online (Java Script, PHP, SQL)

- Collaborated on design and implementation of a web-based Education and MCQ Exam system which maintains a database of educational materials and tracks student performance and account information.

Technical Expertise

- Proficient in C/C++, C#, .Net, Java, Assembly, PHP, MATLAB, XML, .Net CF
- Extensive knowledge on Windows 9X/2000/XP/Server/CE, Linux, and UNIX
- Worked in all major database platforms – SQL Server, MS Access, MySQL
- Expert in BizTalk Server 2004, BizTalk Server Accelerator, HL7, SQL Reporting Service

Professional Activities

- Paper reviewer: ACM CoNext 2009, IWQoS 2009, CHI 2008 Notes, COMPSAC 2005, ITCC 2005, ICCIT 2005, ITNG 2006, ITNG 2007, IICAI

Extracurricular Activities

- Public Relation Officer, Hridoya Bangladesh [Hridoya Bangladesh is a US based non-profit organization to provide monetary assistance to the financially challenged individuals of Bangladesh to continue their education who have demonstrated excellent academic potential (2007 – 2008)]
- Publicity and Fund-raising coordinator for Monga (Famine) victims in Bangladesh, 2005
- Member, Preparing Future Faculty (PFF), Marquette University (2004-2006)
- Speaker, Social and Cultural aspects of South Asia, Department of Communication, Marquette University, 2004

- Volunteer, Marquette University International Office activities (e.g. cultural diversification, international student orientation, assisting new international TAs to learn about US classroom culture, etc.) (2004-2006)
- Speaker, Marquette University International Office activities, Panel discussion about academic and social life of the international students (2004-2006)
- Member, Toastmaster, Direct Supply chapter, Milwaukee, WI (2006-2007)
- Member, Blood Drive and Flu shot committee, Direct Supply, Milwaukee, WI (2007)
- Leader, Dhanmondi Govt. Boys' High School Scouts Group, Bangladesh Scouts
- Chief Coordinator, Wisconsin Bangladesh Online Community, WI (2004-current)

References

- **Klara Nahrstedt**
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