

## Md. Atiqur Rahman

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RESEARCH INTERESTS	<b>Artificial Intelligence:</b> Machine Learning, Information Retrieval, Natural Language Processing
EDUCATION	<b>Bachelor of Science, Computer Science and Engineering, 2010</b> Faculty of Engineering and Technology, University of Dhaka, Bangladesh <b>CGPA 3.44/4.00 (Rank: 8/42)</b>
EXPERIENCE	<div><div><i>Software Engineer</i> REVE Systems, Bangladesh</div><div>[Jan 2011 - Dec 2012]</div><ul style="list-style-type: none"><li>• <b>SSH Server Modification:</b> Modified open-ssh server, adding one time token-based authentication with regular user authentication to enhance security. Developed pluggable authentication module (PAM) to apply enhanced security features and deployed it on servers using Red Hat Package Management system.</li><li>• <b>PC GSM Gateway:</b> My responsibilities in this project included developing TAPI application to perform gsm calls using PC and USB voice modems, routing IP calls as well as GSM calls so that it functions as GSM Gateway software.</li><li>• <b>Terminal Adapter Project:</b> To provide clients with customized, user friendly, automated ATA devices to talk over IP I have designed and implemented a multi-threaded stun client into ATA device firmware. I have implemented auto provisioning (setting SIP switch IP, port etc according to server response), auto update firmware (using http and ftp), SIP encryption (with dynamic signaling keys), RTP encryption, Random RTP implementation. OS of the embedded device was <math>\mu C</math>/OS-II; implementation programming language was C. This project was initiated by me and had been deployed for more than a thousand clients.</li><li>• <b>Router Firmware Project:</b> Responsibilities in this project included building a stable router firmware from existing open-source base, adding functionalities into the firmware so that it can modify network packets and encrypt/decrypt them to save computations on client side.</li><li>• <b>J2ME Call-through Application for Series 40:</b> Developed a call-through dialer application for Series 40 with JavaME SDK.</li></ul></div> <div><div><i>Senior Software Engineer</i> REVE Systems, Bangladesh</div><div>[Jan 2013 - Present]</div><ul style="list-style-type: none"><li>• <b>Video Dialer:</b> My responsibility in this project was to improve the quality of video over the network and overall software. We chose ffmpeg h264 video with aac audio for streaming and used directshow for rendering.</li><li>• <b>IM Dialer UI Design and Implementation:</b> I designed UI for IM dialer with custom controls that support emot icons. I have implemented custom drawing methods using native Windows SDK that are asymptotically bound to <math>\log n</math>.</li></ul></div>

## MAJOR COURSES COMPLETED

*Artificial Intelligence, Design and Analysis of Algorithm, Theory of Computation and Automata, Compiler Design, Computer Graphics Fundamental, Computer Architecture and Organization, Computer Networks, Database Management System, Operating System, Numerical Analysis, Vector Geometry etc.*

## PROGRAMMING CONTESTS

### Programming Contests Rank

As a member of team "DU Gladiator"

ACM ICPC Dhaka Site-2008 : 15th

ACM ICPC Dhaka Site-2007 : 9th

NCPC ULAB-2008 : 6th

### Robotic Contests Rank

Next Sapiens Robotic Contest : 4th

## BSC THESIS

*"Discovering Paths using Regular GPS Devices."*

The goal of the thesis is to discover and make unidentified paths visible to users and providing semantic information. These paths are unidentified in typical map drawing systems i.e, Google Maps because either they are new (recently constructed) as map drawing systems update on long intervals or these paths are not established yet. However, they are important because they present alternatives to users. We apply some well recognized A.I mechanisms on GPS data collected from travelers (voluntary users) with widely available low cost GPS devices i.e., cellphones or other embedded devices that have GPS component. This data represents raw paths or trails left by the travelers. It contains lots of errors because of use of inexpensive GPS devices and misses data at random points. We apply unsupervised clustering to determine approximate range of data gathered from many travelers and prune away errors generated by inexpensive GPS devices. We use this result to deduce semantic information such as detecting roads and stops. Finally, we draw all derived information using a map drawing system to compare with real paths with associated information.

## ACADEMIC PROJECTS

*Academic Projects completed with Computer Science courses*

- **Distributed Chat Client:** It was 'Parallel and Distributed Systems' assignment. With this chat client application users can chat with multiple users. They can get the list of people who are online and can chat with an online user. Multi-processing based solution is written in C++ using linux socket programming and shared memory concepts. The application is well-tested on Linux and Solaris platforms.
- **3d DX Ball Game:** This game was developed as part of project work of "Computer Graphics" course. Implemented using OpenGL and C it is based on traditional DX ball game.
- **Shoot Aliens, Save the Earth:** It is a game written in Java as supplementary to OOP Lab. The game utilizes the java graphics library to create full-screen interactive gaming environment.
- **Peer to Peer File Transfer Protocol:** A Peer to Peer File Transfer Protocol project, as a Networking Course Project our goal was to implement reliability of data transfer using unreliable user datagram protocol (UDP) over network. It utilizes a central server for initial authentication.
- **Bangla Digital Clock Display:** It was a project submitted as supplementary to Assembly Language Lab. The project is developed using MASM and Win32 API for which its executable program's size is very small. The application displays current time in Bangla (local language of Bangladesh). Its user interface

looks nice as smooth Bangla numeric characters have been designed and used to support unicode and non-unicode platforms.

- **Bangla to Bangla and Bangla to English Dictionary:** It was 3rd year database project developed using Visual C++ .NET. Users can search for Bangla words to find the meaning both in Bangla and English.
- **Typing Tutor Game:** It was a game developed using C to help users learn typing. Borland Corporations graphics library has been used to implement its user interface.

## EXTRA-CURRICULAR PROJECTS

### *Projects completed on interest*

- **Secure Password Manager:** Purpose of this software is to protect confidential data and secret information using AES-256 bit encryption standard. It is almost impossible for hackers to decrypt stored information because of the encryption techniques used. Moreover, as a password manager this software relieves users from remembering cumbersome passwords.
- **Media Ejector:** Using Media Ejector user can eject CD / DVDROM drive directly from keyboard. While pressing Ctrl + J users can eject the CD / DVDROM pressing Ctrl + J again will close the CD / DVDROM tray which works like toggle operation. Being the lightest application for the purpose it is developed using Win32 API and C++. More info: <http://www.softpedia.com/get/System/System-Miscellaneous/CD-Eject.shtml>
- **Pingguin:** Pingguin is a pinging application and a net notifier for Windows System. Based on user selection the application can notify when target computer is online or internet connection is available. Software is developed using C++ and MFC. More info: <http://www.softpedia.com/get/Network-Tools/Network-Testing/SAOSX-PingGUIn.shtml>
- **Shutdown Timer:** With the help of this application computer can be shutdown at specified time and date. It is developed using Wind32 API and C. More info: <http://www.softpedia.com/get/System/Launchers-Shutdown-Tools/Atique-Shutdown-Timer.shtml>
- **Website for Hongkong Bangladesh Embassy:** Developed website for Hongkong Bangladesh Embassy forming a team of 3 members. Site is hosted on following domain: <http://bangladeshconsulate.hk/>
- **Bangla Date Gadget for Web:** Bangla (local language of Bangladesh) speaking people can attach this module to display Bangla date on their sites with varying fonts and styles. It is written using PHP and JavaScript.

## COMPUTER SKILLS

### *Programming Languages*

Matlab, Python, C, C++, Prolog, C#, Java, JavaScript, PHP, HTML, Assembly Language, OpenMP, VHDL

### *API & Frameworks*

Windows SDK, ATL, WTL, MFC/VC++, COM, .NET Framework, J2ME

### *Graphics Programming*

OpenGL, DirectX, Borland Corporation's Graphics Library

### *Database*

MySQL, Oracle SQL, MS-SQL Server 2008

*Source Control*

CVS, SVN, Team Foundation Server, Mercurial

*Scripting*

Bash, Powershell, Ksh, Windows Batch

*Operating System*

Oracle Solaris, Linux (Enterprise and Community OSs), Windows (Server and Desktop), DOS, OS161,  $\mu$ C/OS-II

*Others*

Socket Programming, Linux System Programming, Kernel Development, Network Simulation, Lex/Yacc and Office Apps