

# MD MUSHFEKUR RAHMAN

(+88) 01307-156-167 | [mushfekurrahman.com](http://mushfekurrahman.com) | [rahman.mushfek@gmail.com](mailto:rahman.mushfek@gmail.com)

## RESEARCH INTERESTS

---

**Software Engineering, Parallel and Distributed Systems, Data Mining, Information Security, Machine Learning**

## EDUCATION

---

**BSc (Honours) in Computer Science and Engineering**

2009 - 2013

University of Dhaka

*Dhaka, Bangladesh*

CGPA: 3.58 (3.65 in last 2 years)

Extra-curricular Activities: Algorithmic problem solving and competitive programming

## INDUSTRY EXPERIENCE

---

**Senior Software Engineer**

July 2018 - Present

*Therap Services*

- Designed and developed a file transfer infrastructure based on **Enterprise Integration Patterns** to streamline file transfers between Therap and external SFTP servers.
- Developed API to lookup standard diagnosis codes (e.g. ICD-9/10) with a **typeahead search** functionality.
- Developed an Issue Tracker application to import user reported issues from a third-party system (Salesforce Cloud) along with a **live chat platform**.
- Designed and developed **telephony integration (IVR)** system for Therap **Electronic Visit Verification (EVV)** system.

**Software Engineer II**

July 2016 - June 2018

*Therap Services*

- Developed a Notification Delivery and User Activity Tracking System. The system currently handles around **2 Million** notifications per day.
- Designed and developed an Email like application to securely transfer sensitive **PHI data and medical health records** which complied with standards such as **HIPAA, HL7** and **SOC 2.0**.
- Developed an Excel based Reporting Framework and added support for streaming Excel building/reading to handle very large amount of data in a memory efficient way. This change **reduced generated file size up to 30%** and resulted in a faster response time.

**Software Engineer I**

July 2014 - June 2016

*Therap Services*

- Designed and developed a fully configurable data collection form with custom dynamic questionnaire which is being used to record services provided to users.
- Improved Therap **search framework** for health record archives. Simplified the framework APIs for developers.

**Associate Software Engineer**

July 2013 - June 2014

*Therap Services*

- Migrated the codebase of Therap Android application to use newer Gradle based Android build tool from legacy Maven tools and was able to **cut down build time to one third**.
- Developed **REST APIs** and added **Android app** feature for multiple user profiles where users will be able to customize separate set of privilege and applications for each profile.

## COMPETITIONS AND ACHIEVEMENTS

---

- **National Hackathon 2015**. Developed an application named **Prottoyee** to help preventing Sexual Harassment (one of the prominent problems of the country) in a 36 hour long planning, designing and coding sprint. [Link]
- **BASIS Code Warrior's Challenge 2014**. Developed a smart universal contact manager for iOS to accumulate all the contact informations from phone as well as social media. Rank: Honorable Mention. [Link]
- **CUET RMA RoboRace 2011**. Rank: **6<sup>th</sup>** (Team: DU Hello World).

- **Bangladesh University Inter-University Collegiate Programming Contest 2011.** Rank: **9<sup>th</sup>** (Team: DU Hello World).
- **Daffodil Inter-University Collegiate Programming Contest 2010.** Rank: **12<sup>th</sup>** (Team: DU Hello World).
- **BUBT CSE Fiesta 2010.** Rank: Honorable Mention (Team: DU Hello World).
- **CSEDU Intra-Batch Programming Contest 2009.** Rank: **7<sup>th</sup>**.

## RESEARCH WORKS

---

### **An Intelligent and Unified Log Analytics Infrastructure** (Ongoing)

- Working on a system to get insights from application, system logs and user generated events inside a **DMZ** to facilitate **sensitive data leakage prevention (PHI, HIPAA)**, **problem diagnosis**, **usage trends analysis**, **resource provisioning**, etc. using **ML and NLP (CRF based identification)** algorithms.

### **An Automatic Method for Red-eye Detection and Correction in Digital Images** (Undergrad Thesis)

- Developed a state of the art automatic red-eye detection and correction system based on **image processing** and **pattern recognition** algorithms. The system achieved up to **92% accuracy**.

### **Web Application Security and Code Quality Analysis with Static Code Analyzers**

- Used multiple open source and proprietary static code analysis tools (Sonarqube, Checkstyle, PMD, FindBugs/SpotBugs) to detect potential vulnerabilities (e.g. **OWASP Top 10 Security Vulnerabilities**). Later fixed those findings using **Pareto Principle (80/20 rule)** which fixed more than 95% of the reported issues.

### **Sandman: An Intelligent Sleep Tracker**

- Developed a sleep quality prediction system based on the features extracted from **Heart-rate, Movement, and Circadian Rhythm data from the MEMS and PPG sensors of Apple Watch**. Sleep stage detection was done using **Random Forests** and **Neural Networks** which achieved **90% accuracy and 60% specificity**.

### **REST API Request Profiling and Performance Analysis in Highly Concurrent Environments**

- Developed **load/stress testing application** with Gatling to work on **REST API** endpoints to simulate concurrent high-traffic and assess API performances from various metrics such as throughput, response time, backend query latency etc. Later optimized the APIs to achieve accepted level of performance.

### **Performance Comparison of AODV and DSDV Routing Protocols in Mobile Ad Hoc Networks (MANET)**

- Simulated two routing protocols using **NS2** for Mobile Ad Hoc Networks: The **Destination Sequenced Distance Vector (DSDV)** and the **Ad Hoc On-Demand Distance Vector routing (AODV)** and evaluated both protocols based on packet delivery fraction and throughput while varying number of sources and pause time.

## ACADEMIC PROJECTS

---

- **Distributed Systems:** A distributed file sharing system based on Google File System (GFS)
- **Compiler Design:** An intermediate code generator for a subset of C language by Back-Patching using Flex and Bison
- **System Programming:** Simple character device driver for Linux platform
- **Data Mining:** Apriori and FP-Growth algorithms performance analysis
- **Design and Analysis of Algorithms:** File (ASCII) compression application based on Huffman Coding
- **Computer Peripherals & Interfacing:** Line follower robot using ATmega32 microcontroller
- **Microprocessor & Assembly Language:** Snake game with a x86 bootloader
- **Computer Architecture:** 4-bit Arithmetic Logic Unit (ALU)
- **Object Oriented Programming:** Distributed Mutual Exclusion algorithm simulator in Java
- **Operating System:** A simple Bash like Unix shell with file information lister (ls command)

## TECHNICAL SKILLS

---

**Languages:** Java, SQL (Oracle, MySQL), JavaScript, Python, Swift, C/C++

**Frameworks and Platforms:** Spring Framework, Java Enterprise Edition, ReactJS, Hazelcast, Elasticsearch, Pandas, TensorFlow, RxJava, GraphQL, ActiveMQ, Hadoop Ecosystem, OpenCV, jQuery, Android & iOS app development

**Developer Tools:** Git, Docker, Jenkins, Gradle, ELK Stack, Unit Testing (JUnit, TestNG, Mockito), Static Code Analysers (PMD, SpotBugs, Checkstyle, Sonarqube), JVM Profiling and Tuning (JMC, JFR), Vim, VS Code, IntelliJ IDEA