Masum Billal

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Education

BSc, *CSE,Department of Computer Science and Engineering,University of Dhaka*, Bangladesh.

Work Experience

2018–present	**Machine learning engineer and senior programmer**, *Auleek*, Dhaka.
2017	**Software engineer, R&D**, *March,* 2017 *to September,* 2018, Reve systems, Dhaka.
2016	**Data analyst and software developer**, *Remote Job*, Threat Equation PTE Ltd.,Singapore.

Projects

2019–present   **Floorplan feature extraction and interior design**, *Auleek*, Python, C++, C#, An ongoing project on data driven solution to generate interior designs based on consumer's taste. Currently some features can be extracted from floorplans..

2019   **Mesh generator and object placer**, *Auleek*, C++, C#.
Mesh generation for different kind of object shapes, mesh combining such as union or intersection, checking if an object can be placed in an arrangement (for example with rotation) etc.

2016   **Improving Collaborative Filtering Based Recommender Systems**, *Recommender System*, Platform: Python/C++, BSc Thesis.
The aim of this thesis was to improve accuracy of recommender systems based on collaborative filtering and develop theory/model for measuring similarity or accuracy or recommended ratings.

2016   **Data Analysis**, *Web server log analysis and prediction of vulnerability*, Threat Equation PTE Ltd..
I analyzed web server logs to predict attacks on the client site to anticipate them before they even happened. The logs were generated from different penetration and vulnerability tests to train the system.

2016   **Web Application, Data Analysis**, *Dashboard*, Threat Equation PTE Ltd..
My role in this project was to build a dashboard using **Django, REST, ChartJS** that would collect data from the plugin and provide visualization and analysis results in the dashboard.

2018 **E-Veternary Services**, *A govt project for developing a web based system to provide livestock health care*, Reve Systems, Language: Java, JavaScript. Framework: Spring boot. .
I am working in both backend and frontend for this project. For backend, we are using Java Spring Boot Framework (ReSt API enabled) with thymeleaf as frontend processor powered by JavaScript.

2017 **Ip log**, *Networking, Socket and protocol programming, Multithreading, Algorithm*, Reve systems.
My job in this project was to receive packets from a network interface and parse related information from those packets.

2017 **Web, R&D, Algorithms, Surveillance**, *Reve systems*, In this project, my job was to develop an application that can accurately predict alternative number of a user from their history.
Later, I also had to study on GSM networks and develop models to estimate distance and exact location of a user. It had some more interesting features as well

2017 **Web security**, *Penetration testing and log analysis*, Reve systems.
I have also worked on security side. Did some penatration tests on some of our live systems, but I am more interested in my focused areas like development.

2017 **Localization**, *Geolocation, trilateration and multilateration*, Reve Systems.
In this project, I developed a system to predict the location of a device given information about three or more cell towers that device was connected to.

2016 **A movie recommender system**, *Personal project*, Platform: Python, Tools: *pandas, scikit-learn, numpy etc*, In this project I have predicted movie ratings using **Naive Bayes**.
https://github.com/fifaboy/rec-mnb

2017 **Artificial Intelligence**, *Belief Propagation Simulator*, Platform: C++, This project was a simulation of the **belief propagation**, an established technique in artificial intelligence..
https://github.com/fifaboy/belief-propagation

2017 **Personal project**, *A machine learning library for C++*, Platform: C++, In this project (incomplete), I am writing a machine learning library containing some popular algorithms in machine learning and data mining..
https://github.com/fifaboy/cppmllib

Achievements

2013 **Inter-University Programming Contest**, *North South University, Bangladesh*, Rank 9.

2012 **Inter-University Programming Contest**, *IUT, Bangladesh*, Rank 13.

2013 **ICPC**, *Dhaka Regional, Bangladesh*, Rank 17.

2012 **ICPC**, *Dhaka Regional, Bangladesh*, Rank 18.

2010 **Medal in math olympiad**, *Bangladesh Mathematical Olympiad*, National, Regional.

2009 **Medal in math olympiad**, *Bangladesh Mathematical Olympiad*, Regional.

2011 − 2015   **Trainer at math camps**, *Bangladesh Mathematical Olympiad*, National, Extension and IMO math camps.

Publications

2019   **Topics in Number Theory: An Olympiad Oriented Approach**, *Masum Billal, Amir Hossein*, Amazon.

2015   **Similarity Aggregation for Collaborative Filtering**, *AIST Conference*, Sheikh Muhammad Sarwar, Masum Billal, Mahmudul Hasan, Dimitry I. Ignatov. http://link.springer.com/chapter/10.1007/978-3-319-26123-2_23

2014   **A Nice Theorem in Multiplicative Functions**, *Eureka, The Cambridge University Mathematical Society*, Issue 63, Masum Billal.

2012   **Exponent GCD Lemma**, *Mathematical Reflections*, Issue 6, Masum Billal.

2015   **Combinatorial Geometry In Olympiad**, *Accepted for Mathematical Reflections in* 2015, Masum Billal, Nur Muhammad Shafiullah.

Skills

Programming languages	C, C++, C#	Level:	Professional development
	Python, Java	Level:	Professional development
Markup/Script	HTML, CSS, Javascript, MySQL, Thymeleaf, Jinja2		
Others	LaTeX, Git, Bootstrap etc		

Interests and Hobbies

Research   Optimizing algorithms or finding new ones. Studying on topics I am interested in for interesting results. Mathematics, Algorithms, Cryptography, Machine Learning etc.

Programming   Creating and solving problems. Proposed some problems for Hackerrank and some inter university contests.

Mathematics   Finding new results and creating or solving new problems.

Publication   Publishing articles or papers on journals.

Gaming   Playing Dota 2, Assassin Creed Origins, Sekiro etc.

Others

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○ Blog: https://karushib.wordpress.com/

References

- *Mahbub Majumdar*, Professor, Computer Science & Engineering Department, BRAC University, Buidling-5, Floor-4th, Room: UB50402
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