



# Masum Billal

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Github: <https://github.com/fifaboy>

Mobile: +8801779788023

Email: [billalmasum93@gmail.com](mailto:billalmasum93@gmail.com)

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## Education

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

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## 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.

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## Projects

- 2019 **Deep learning, computer vision, feature extraction, object detection**, Auleek, Python, C++, I used deep learning in tensorflow to extract features from floorplan images. The challenge was to find a viable solution that can detect elements such as doors, walls, windows etc and I was able to do it using object detection.
- 2019 **Computer vision, 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.
- 2018 **E-veterinary, web development**, Reve systems, Java, Spring Boot, JPA, I worked on both backend and frontend for this government project. We used Spring boot for faster development, thymeleaf and javascript for front-end communication and JPA for hibernate-like ORM manipulation. Agile development process helped us complete the project within the tight deadline..  
Here is the live server <http://evet.gov.bd/login>
- 2017 **IP log, Networking, Multithreading**, Reve systems, C++, My job in this project was to receive and process all incoming and outgoing packets from a network interface. Multithreading was necessary to prevent packet loss..

- 2016 **Machine learning, recommender Systems, improving collaborative filtering**, *Bsc Thesis*, C++, Python, In my thesis, I developed a recommender systems with F-1 score of almost 75%. I intend to improve it even further. I also presented some ideas which are similar to ensemble learning.
- 2016 **Machine learning, web development, data analysis**, *Threat Equation PTE Ltd*, Python, Django, My role in this project was to predict vulnerability from server logs after training them on previously fed data. Then I had to present the predictions and related information in the dashboard for visualization.

## Achievements and voluntary experience

- 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, Dmitry I. Ignatov.  
[http://link.springer.com/chapter/10.1007/978-3-319-26123-2\\_23](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.
- 2016 **10th Bangladesh Mathematical Olympiad: Selected Problems and Solutions**, *Bangladesh Math Booklet*, 2015.  
<https://karushib.wordpress.com/2016/05/29/bangladesh-booklet-of-math-problems-2015/>

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

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## Others

- LinkedIn: <https://www.linkedin.com/in/billalmasum93>
- Blog: <https://karushib.wordpress.com/>

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## References

- *Mahbub Majumdar*, Professor, Computer Science & Engineering Department, BRAC University, Buidling-5, Floor-4th, Room: UB50402  
45 Mohakhali C/A, Dhaka, Bangladesh  
Email: [majumdar@bracu.ac.bd](mailto:majumdar@bracu.ac.bd)
- *Farhad Alam Bhuiyan*, Software Engineer  
Dohatec New Media  
Email: [farhad@dohatec.com.bd](mailto:farhad@dohatec.com.bd)