

# Masum Billal

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## EDUCATION

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**University of Dhaka**  
*CSE*

**Dhaka, Bangladesh**  
*BSC*

## Summary

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- Pursuing career in data science, mostly in machine learning.
- Worked as full stack web developer and software engineer.
- Involved in machine learning since the publication in 2015.
- From mathematical and competitive programming background.

## EXPERIENCE

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### **Auleek**

*Machine learning engineer*

**Dhaka, Bangladesh**  
*October 2018 - May 2019*

#### ○ **Hestia**

- Used deep learning in tensorflow to extract features (door, wall, window etc) from floorplan images.
- RnD on interior design automation, such as structural groups of furnitures and finding the most optimal configuration.
- Implemented 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.

### **Reve Systems**

*Software Engineer*

**Dhaka, Bangladesh**  
*March 2017 - September 2018*

#### ○ **e-Veterinary Services**

- Worked full-stack from Spring Boot framework to thymeleaf frontend templating, bootstrap and javascript.
- Used JPA for hibernate-like ORM manipulation.
- Followed agile development process for meeting tight deadline.
- Live server of project: <http://evet.gov.bd/login>

#### ○ **IP Log**

- Worked on networking and socket protocols for receiving and processing all incoming and outgoing packets in a network.
- Used multi threading for avoiding packet loss and prevented buffer overflow during packet receiving.

#### ○ **Surveillance**

- Worked on backend of this Struts based project.
- Implemented features such as duplicate number detection, home or office detection etc based on geolocation.
- Did RnD on geolocation, 2G/3G/GSM protocols and distance estimation models from signal strength and related parameters.
- Implemented trilateration as part of this project.

### **Threat Equation PTE LTD.**

*Software developer and data analyst*

**Dhaka, Bangladesh**  
*April 2016-September 2016*

### ○ Threat Equation

- Worked on backend of a Django dashboard.
- Pared server logs for feeding data into the learning model for predicting vulnerability in the application.
- Used libraries such as Chart.js to show visualization of predicted results and related data in dashboard.

## Achievements and voluntary experience

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**2009:** Medal in regional mathematical olympiad, Dhaka, Bangladesh.

**2010:** Medal in regional and national mathematical olympiad, Bangladesh.

**2011-2015:** Trainer (specially for number theory) in national and IMO math camps.

**2012:** Participated in Dhaka regional ICPC, rank 18.

**2012:** Participated in Inter-University Programming Contest, Islamic University of Technology, Bangladesh, rank 13.

**2013:** Participated in Dhaka regional ICPC, rank 17.

**2013:** Participated in Inter-University Programming Contest, North South University, Bangladesh, rank 9.

## Publications

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

**2015:** Similarity Aggregation for Collaborative Filtering, AIST Conference *Sheikh Muhammad Sarwar, Masum Billal, Mahmudul Hasan, Dimitry I. Ignatov*

**2014:** A Nice Theorem in Multiplicative Functions, Issue 63, Eureka, Cambridge Mathematical Society

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**2012:** Exponent GCD Lemma, Issue 6, Mathematical Reflections

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## PROJECTS

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### Localizer

2019

- A self-contained tool for localizing objects in images.
- Used darkflow to implement state-of-the-art YOLO algorithm for object detection in tensorflow.

### Improving Collaborative Filtering Based Recommender Systems

BSc Thesis, 2016

- Developed a new recommender system.
- Achieved F-1 score of almost 75% on movielens dataset.
- Introduced, implemented ideas of aggregating multiple metrics and tested the hypothesis.
- Currently work on progress to improve it even further.

### Otaku Store

2016

- Worked full stack for building a Django framework based e-commerce site.

### A Recommender System

2016

- Developed a recommender system based on Multinomial Naive Bayes for learning purpose.

## Others

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

**LinkedIn:** <https://www.linkedin.com/in/billalmasum93/>

**Blog:** <https://karushib.wordpress.com/>