



# Masum Billal

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## Education

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

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## Work Experience

**2019 Senior Data Scientist, August 2019 to present, Shohoz, Dhaka.**

My work at Shohoz.

- Successfully completed data pipelines, analytics and visualization and scalable data storage solution for Corona Tracer Bangladesh, a joint venture by Bangladesh government and Shohoz. Tech stacks: PySpark, Cassandra, Bokeh, Pandas, Holoviews, etc. This project is live at <http://tracer-admin.ctbd.corona-dghs.xyz/>
- Built data pipelines in AWS, Azure (python) using message queue services such as Service bus/Event Hub/Kafka or machine learning pipeline services.
- Hands on exploratory data analysis of real user data using tools such as pandas, PySpark, Scikit-learn, Tensorflow, PyTorch, etc.
- Developed some fraud detection services e.g. automated syndicate detection in ride sharing.
- Developed an automated user profiling system for quest planning.
- Developed automated priority dispatching services.
- Used data mining techniques for provider distribution/trend analysis/recommendation.

**2019 Machine learning engineer and senior programmer, October 2018 to May 2019, Auleek, Dhaka.**

My work at Auleek.

- Developed an application in python that uses deep learning to identify different components of a floor-plan image.
- Worked on mesh generation/union and object placement in a floor-plan in Unity3d/C#.

**2017 RnD Software engineer, March 2017 to September 2018, Reve systems, Dhaka.**

My work at Reve.

- Developed a web application as part of a govt. project using Java SpringBoot, Thymeleaf, JPA along with vanilla JS (full stack). Project site: <http://evet.gov.bd/login>
- Built a multi-threaded C++ application that captures all packets that are received in a network.

**2016 Software developer, Remote Job, Threat Equation PTE Ltd., Singapore.**

My work at Threat PTE.

- Used django framework to build a web dashboard (full stack).
- Used machine learning algorithms on server logs to predict whether it indicates an attack (if so, what type).

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## Pet Projects

- Seeding in **Unsupervised learning**, *Research*, Python, I tried to improve the **k-means** clustering algorithm in this project.  
k-means clustering <https://github.com/proafxin/clustering>
- Localizer **Object detection**, *Personal project*, Python, This project is a deep learning based localization application. It can be trained using given images and detect the objects in test images.  
<https://github.com/proafxin/Localizer>
- Improving collaborative filtering **Machine learning**, *Research on recommender Systems*, C++, Python, In this project, I developed a recommender systems with F-1 score of almost 75%. This was part of my BSc. thesis.
- Media recommender **Machine learning based web application**, *Personal project*, Django, This is a web application that provides personalized feed based on user preferences and past history.  
<https://github.com/proafxin/media-recommendation>
- Online library **Web application**, *Personal project*, Dotnet core, This is a dotnet core MVC based web application for online library..  
<https://github.com/proafxin/library>

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## 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.
- 2019 **Mathematical programming**, *Global Rank 132 on Hackerrank mathematics section*.

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## Publications

- 2020 **Integer Sequences: Divisible, Lucas and Lehmer Sequences**, *Masum Billal, Samin Riasat*, To be published in Springer Nature soon.
- 2018 **Topics in Number Theory: An Olympiad Oriented Approach**, *Masum Billal, Amir Hossein*, Amazon, ISBN-10: 1719920311.
- 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**, *Masum Billal*, Eureka, The Cambridge University Mathematical Society, Issue 63.
- 2012 **Exponent GCD Lemma**, *Masum Billal*, Mathematical Reflections, Issue 6.  
2012

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/>

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## 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 games, etc.

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## Others

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

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## References

Farhad Alam Bhuiyan, Data Science Lead, Shohoz, Bangladesh. Email: [farhad.alam@shohoz.com](mailto:farhad.alam@shohoz.com)

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