B M Mainul Hossain, PhD
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📍 Room#101, Institute of Information Technology (IIT), University of Dhaka, Bangladesh

ℹ Expertise : Machine Learning, Computer and Internet Security, Software Engineering

📖 EDUCATION

2014	Ph.D. in Computer Science, University of Illinois at Chicago, USA.
2007	MS, Computer Science & Engineering, University of Dhaka, Bangladesh.
2005	BSc, Computer Science & Engineering, University of Dhaka, Bangladesh.

💼 PROFESSIONAL EXPERIENCES

Sep 2008 – Till Date | Faculty Member | Institute of Information Technology, UNIVERSITY OF DHAKA, Bangladesh
> Responsible for teaching, conducting research and supervising project/research works of students.

Research | Teaching | Training

Aug 2009 – May 2014 | Research/Teaching Assistant | University of Illinois, CHICAGO, IL, USA
> Responsible for conducting research under various research projects, grading the exams and projects of undergraduate and graduate level students, instructing in the lab classes of programming languages.

Research | Teaching

May 2013 – Aug 2013 | Internship : Software Engineer | Microsoft Corporation, REDMOND, WA, USA
> Responsible for the design and implementation of the automation systems to be used in development and testing cycles, for creating tools to help to review source code for trouble spots and isolating problems.

Test Automation | Bug Detection Tool

May 2012 – Aug 2012 | Research Intern | Accenture Technology Lab, SAN JOSE, CA, USA
> Responsible for investigating various research facets related to software architecture in enterprise systems, working on various distributed data management platforms to achieve scalability with higher performance.

Scalability | Distributed Data Management

May 2011 – Aug 2011 | Research Intern | Accenture Technology Lab, CHICAGO, IL, USA
> Responsible for research in automated testing of rule-based applications focusing on the non-deterministic behavior inherent in those applications, working in projects regarding the optimization of virtual machine migration.

Rule-based Applications | Virtual Machine Migration

Oct 2006 – Jul 2008 | Software Engineer | Uniqa Software & Systems Ltd., Bording Vista Ltd., DHAKA, Bangladesh
> Responsible for implementing enterprise level software for the Japanese health care systems (at Uniqa) and implementing enterprise level software for various clients in Denmark (at Bording Vista).

Software Development | Project Management

🗄 TECHNICAL COMPETENCIES

Languages	JAVA, C, C++, Python, R, SQL, JavaScript, .NET, PHP, JSP
Frameworks	Keras, Tensorflow, ANTLR, SOOT, HADOOP, SELENIUM, AspectJ, JMeter, JUnit, METASPLOIT
Databases	Oracle, MS SQL Server, MySQL, PostgreSQL
Development Tools	PyCharm, Eclipse, Visual Studio, SVN, git
Analysis Tools	SPSS, R, Weka

🖥 RECENT PROJECTS

EDGE (GoB)   **Academic Expert**, Jan 2023 - Ongoing, Funded By : ICT Division, Government Republic of Bangladesh (GoB), World Bank, *Note :* Enhancing Digital Government and Economy (EDGE) Project has initiated hire and train program to address the skills shortage in the areas of emerging technologies.

DLC (GoB)   **Domain Expert**, Aug 2021 - July 2022, Funded By : ICT Division, Government Republic of Bangladesh (GoB), *Note :* Under the Government of Bangladesh, Digital Literacy Center (DLC) is an initiative to build a digitally aware society by increasing digital literacy.

BDSkIlls (GoB)   **Project Director**, May 2020 - March 2021, Funded By : ICT Division, Government Republic of Bangladesh (GoB), *Note :* A skill assessment system has been developed under this project with the collaboration of industry, academia and the government.

REVIVE (UNDP)   **E-Commerce and Digital Platform Adviser**, August 2020 - December 2020, Funded By : United Nations Development Program (UNDP), *Note :* Under the ICE center of the University of Dhaka, policy recommendations provided to the stakeholders to address several barriers including ICT adoption in the business process of the cottage, micro, small and medium enterprises of Bangladesh.

Inpainting (UGC)   **Pricipal Investigator**, Jun 2020, Funded By : University Grants Commission (UGC), Bangladesh. *Note :* Deep learning based facial inpainting technique is being used to reconstruct the damaged images.

EBLICT (GoB)   **Research Consultant**, Jun 2020 - Ongoing, Funded By : Government Republic of Bangladesh (GoB), *Note :* This work is about the development of complete Bangla OCR and Integration of hand writing recognition system.

HEQEP (WB)   **Member, IITDU Committee**, May 2017 - Ongoing, Funded By : World Bank, *Note :* Higher Education Quality Enhancement Project (HEQEP) for Bangladesh is to improve the quality of the teaching and research environment.

📊 SELECTED PUBLICATIONS

Journals :

1. Afia Sajeeda, **B M Mainul Hossain**, Exploring generative adversarial networks and adversarial training, International Journal of Cognitive Computing in Engineering, Volume 3, 2022, ISSN 2666-3074, https://doi.org/10.1016/j.ijcce.2022.03.002.

2. Sajeeda, Afia, **BM Mainul Hossain**, and Sumon Ahmed. A Comparative Study of Missing Data Imputation Methods for Activity Recognition Task. Dhaka University Journal of Applied Science and Engineering 7.1 (2022) : 1-8.

3. Amran Hossain, Niraj Chaudhary, Zahid Hasan Rifad, **B M Mainul Hossain**, Bangla News Headline Categorization, International Journal of Education and Management Engineering (IJEME), Vol.11, No.6, pp. 39-48, 2021. DOI : 10.5815/ijeme.2021.06.05

4. Rahman, M. A., Kabir, M. A., Haque, M. E., **Hossain, B. M. M.** (2021). A Machine Learning-Based Price Prediction for Cows, http://doi.org/10.5281/zenodo.4817941. American Journal of Agricultural Science, Engineering and Technology, 5(1), 64–69. https://doi.org/10.54536/ajaset.v5i1.63

5. Fazle Mohammad Tawsif, Md. Jubair Ibna Mostafa, **B M Mainul Hossain**, CO2 Emission Prediction and Identification of Relevant Factor to the Emission based on Machine Learning Analysis : A Study in Bangladesh. International Journal of Computer Applications. Vol. 183, No.39, 2021

6. Md. Masudur Rahman, Abdus Satter, **B M Mainul Hossain**, An Empirical Study on Stack Overflow Security Vulnerability in Well-known Open Source Software Systems. International Journal of Computer Applications. Vol. 176, No. 39, 2020

7. Partho Protim Dey, Nadia Nahar, **B M Mainul Hossain**, Forecasting Stock Market Trend Using Machine Learning Algorithms With Technical Indicators, International Journal of Information Technology and Computer Science ; 2020 ; Vol 12(3) ;

8. Asadullah Hill Galib and **B M Mainul Hossain**, A Review on Hybrid Analysis using Machine Learning for Android Malware Detection, the Dhaka University Journal of Applied Science and Engineering (DUJASE), Volume 5, 2020

9. Khandaker Mamun Ahmed, Prianka Mandal and **B M Mainul Hossain** : Text to Speech Synthesis for Bangla Language, International Journal of Information Engineering and Electronic Business, vol.11 , pp.1-9 , 2019.

10. Kishan Kumar Ganguly, Nadia Nahar and **B M Mainul Hossain** : A machine learning-based prediction and analysis of flood affected households : A case study of floods in Bangladesh, International Journal of Disaster Risk Reduction (IJDRR), ISSN 2212-4209, DOI:10.1016/j.ijdrr.2018.12.002 (impact factor:2.568), vol.34, no.2019, pp.283-294, 2019.

11. Partho Protim Dey, Nadia Nahar, **B M Mainul Hossain**, News Impact on Stock Trend, I.J. Education and Management Engineering, 2019, 6, 40-49 DOI : 10.5815/ijeme.2019.06.05 ;

12. Md. Mostafijur Rahman, Shanto Rahman, Rayhanur Rahman, **B M Mainul Hossain** and Mohammad Shoyaib : DTCTH : a discriminative local pattern descriptor for image classification, EURASIP Journal on Image and Video Processing (impact factor:1.534 (2-year Impact Factor), 2.190 (5-year Impact Factor)), vol.2017, no.1, pp.30, 2017.

13. Lutfun Lota and **B M Mainul Hossain** : A Systematic Literature Review on SMS Spam Detection Techniques, International Journal of Information Technology and Computer Science, vol.9, no.2017, pp.42-50, 2017.

14. S M Sofiqul Islam, Emon Kumar Dey, Md. Nurul Ahad Tawhid, **B M Mainul Hossain**, "A CNN Based Approach for Garments Texture Design Classification", Advances in Technology Innovation, vol. 2, no. 4, 2017, pp. 119 – 125

15. Prianka Mandal and **B M Mainul Hossain** : A Systematic Literature Review on Spell Checkers for Bangla Language, International Journal of Modern Education and Computer Science, vol.9, no.2017, pp.40-47, 2017.

16. Md. Masudur Rahman, Rayhanur Rahman and **B M Mainul Hossain** : Recommendation of Move Method Refactoring to Optimize Modularization Using Conceptual Similarity, International Journal of Information Technology and Computer Science, vol.9, pp.34-42, 2017.

17. Abdus Satter and **B M Mainul Hossain** : Vulnerabilities Assessment of Emerging Webbased Services in Developing Countries, International Journal of Information Engineering and Electronic Business , vol.8 , no.2016 , pp.1-8 , 2016 .

18. Ishtiaque Hussain, Christoph Csallner, Mark Grechanik, Qing Xie, Sangmin Park, Kunal Taneja and **B M Mainul Hossain** : RUGRAT : Evaluating program analysis and testing tools and compilers with large generated random benchmark applications, Software - Practice and Experience (impact factor:1.338), vol.46, no.2016, pp.405-431, 2016

Conferences :

1. Afia Sajeeda, Shahla Shaan Ahmed and **B M Mainul Hossain**, "A Step towards Text Generation in Bangla Language Using Generative Adversarial Network", 6th ICERIE : International Conference on Engineering Research, Innovation and Education, To be held : Sylhet, Bangladesh, February 26-28, 2021

2. Afia Sajeeda, Shahla Shaan Ahmed and **B M Mainul Hossain**, "Bangla Missing Data Imputation using HexaGAN Framework", ICCIT 2020 The 23rd International Conference On Computer and Information Technology. December 19-21, Dhaka, Bangladesh, 2020

3. Asadullah Hill Galib and **B M Mainul Hossain**, "Significant API Calls in Android Malware Detection." The 32nd International Conference on Software Engineering & Knowledge Engineering (SEKE), Pittsburgh, USA : 2020 .

4. Asadullah Hill Galib and **B M Mainul Hossain**, "A Systematic Review on Hybrid Analysis using Machine Learning for Android Malware Detection." International Conference on Innovation in Engineering and Technology (ICIET), Dhaka, Bangladesh, December, 2019.

5. Kishan Kumar Ganguly and **B M Mainul Hossain**, "Evaluating the Effectiveness of Conventional Machine Learning Techniques for Defect Prediction : A Comparative Study" IEEE Joint 7th International Conference on Informatics, Electronics & Vision (ICIEV) and 2018 2nd International Conference on Imaging, Vision & Pattern Recognition (icIVPR), Volume : 1, Pages : 481-485, Kitakyushu, Japan, Jun 2018 .

6. Mark Grechanik, Chi Wu Mao, Ankush Baisal, David Rosenblum and **B M Mainul Hossain**, "Differencing Graphical User Interfaces." IEEE International Conference on Software Quality, Reliability and Security (QRS) , pp. 203-214. Lisbon, Portugal : 2018 .

7. Prianka Mandal and **B M Mainul Hossain**, "Clustering-based Bangla spell checker," IEEE International Conference on Imaging, Vision & Pattern Recognition (icIVPR), pp. 1-6. doi : 10.1109/ICIVPR.2017.7890878, Dhaka, Bangladesh, 2017

8. Mark Grechanik and **B M Mainul Hossain**, "Enhancing Performance And Reliability of Rule Management Platforms", Proceedings of the 6th ACM/SPEC International Conference on Performance Engineering (ICPE), Austin, Texas, USA, February, 2015

9. **B M Mainul Hossain**, Mark Grechanik, Ugo Buy, Haisheng Wang, "REDACT : preventing database deadlocks from application-based transactions", Proceedings of the 2013 9th Joint Meeting on Foundations of Software Engineering (FSE), Saint Petersburg, Russia, August 18-26, 2013

10. Mark Grechanik, **B M Mainul Hossain** and Ugo Buy. "Testing Database-Centric Applications For Causes of Database Deadlocks", Sixth IEEE International Conference on Software Testing (ICST), Verification and Validation, Luxembourg, March 2013.

11. Sangmin Park, Ishtiaque Hussain, Christoph Csallner, Kunal Taneja, **B M Mainul Hossain**, Mark Grechanik, Chen Fu and Qing Xie, "CarFast : Achieving Higher Statement Coverage Faster", ACM SIGSOFT Symposium on the Foundations of Software Engineering (FSE), Research Triangle Park, NC, USA, November 2012.

12. Ishtiaque Hussain, Christoph Csallner, Mark Grechanik, Chen Fu, Qing Xie, Sangmin Park, Kunal Taneja and **B M Mainul Hossain**, Evaluating program analysis and testing tools with the RUGRAT random benchmark application generator, 10th International Workshop on Dynamic Analysis (WODA), Minneapolis, MN, USA, July 2012.

🎤 Invited Talks

(April 2021-May 2022 only)

1. "Workshop on the Preparation for Fourth Industrial Revolution (4IR)", Keynote Speaker, invited by Ministry of Women and Children Affairs, Government of the People's Republic of Bangladesh, May 10, 2022.
2. "Fourth Industrial Revolution (4IR) : Concepts and Challenges", Keynote Speaker, invited by Non Government Teachers Registration and Certification Authority (NTRCA), Government of the People's Republic of Bangladesh, March 29, 2022.
3. "Fourth Industrial Revolution (4IR) : Prospects, Preparations and Challenges", Keynote Speaker, invited by the Department of ICT (DoICT), ICT Division, Government of the People's Republic of Bangladesh, March 21, 2022.
4. "Fourth Industrial Revolution (4IR) : Concepts and Challenges", Keynote Speaker, invited by the Department of Women Affairs, the Ministry of Women and Children Affairs, Government of the People's Republic of Bangladesh, January 12, 2022.
5. "Fourth Industrial Revolution (4IR) : Prospects, Preparations and Challenges", Keynote Speaker, invited by the Police Headquarters, Bangladesh Police, December 22, 2021.
6. "Fourth Industrial Revolution (4IR) : Concepts and Challenges", Keynote Speaker, invited by the Bangladesh Film Censor Board, the Ministry of Information, Government of the People's Republic of Bangladesh, December 15, 2022.
7. "Fourth Industrial Revolution (4IR) : Prospects, Preparations and Challenges", Keynote Speaker, invited by the Implementation Monitoring and Evaluation Division (IMED), Ministry of Finance, Government of the People's Republic of Bangladesh, November 28, 2021.
8. "Blockchain Technology : Prospects and Challenges", Keynote Speaker, invited by the ICT Division, Government of the People's Republic of Bangladesh, Jun 05, 2021.
9. "Internet of Things", invited by the iDEA, Startup Bangladesh, Government Republic of Bangladesh, Jun 05, 2021.
10. "Blockchain in Bangladesh : Status, Scopes, Prospects & Challenges", DoICT, Government of the People's Republic of Bangladesh, May 30, 2021.
11. "Robotics, IOT in Bangladesh : Status, Scopes, Prospects & Challenges", DoICT, Government of the People's Republic of Bangladesh, April 08, 2021.

🎓 Awards

2012	Second Best project prize. Google Code Competition, Jan 27, 2012 at Chicago, represented the University of Illinois at Chicago.
2011	Finalist of the USCC US Cyber challenge 2011 that lead to attending the 2011 the US Cyber Challenge (USCC) Virginia Regional Cyber Security Boot Camp held in August 1st through the 5th.
2011	Finalist of the ITA Fall challenge 2010 and 2012 (two times), organized by Illinois Technology Association, represented the University of Illinois at Chicago.
2005	Recipient of University of Dhaka Talent-pool scholarship and full tuition waiver for excellence in B.Sc. (Honors) in the Faculty of Science, University of Dhaka, Bangladesh.
1998	Recipient of Government scholarship and full tuition waiver in the Department of Computer Science & Engineering, University of Dhaka, Bangladesh, for excellence in H.S.C examination, 1998, Dhaka Board.

👫 Community/Administrative Services

> **House Tutor**, Dr. Muhammad Shahidullah Hall, University of Dhaka from 2016 to till date, responsible for several administrative tasks of the residential hall along with the provost and other house tutors.
> **President**, CSF Alumni Association, a welfare organization of the ex-students of my Upazilla who studied at the University of Dhaka, Dhaka Medical College, or Bangladesh University of Engineering & Technology.
> **Vice President**, Center for Open Knowledge (CoK), a non-profit organization to work on Open Data, Open Education, Open GLAM, Open Science, Open Policy, Creative Commons.