MD MEHEDI HASAN

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RESEARCH INTEREST

Artificial Intelligence, Machine Learning, Intermodal Transportation, Freight Logistics

EDUCATION

Ph.D. in Industrial, Manufacturing & Systems Engineering — Sep 2023 – continue
Texas Tech University, E. Whitacre Jr. College of Engineering, Lubbock, TX 79409
CGPA (till now): 4.00/4.00

Bachelor of Science in Electronics and Telecommunication Engineering — Jan 2012 – Oct 2016
Rajshahi University of Engineering & Technology
Rajshahi, Bangladesh. CGPA: 3.50/4.00 (Class Position: 11th)

WORKING EXPERIENCE

Software Engineer — Dec 2019 – July 2023
Zantrik
Dhaka, Bangladesh

- Android mobile application development using Android SDK, Java, SQLite database
- Cross-Platform mobile application development using React Native
- Machine learning and statistical modelling techniques development to increase performance, quality, data management, and accuracy
- Designing machine learning systems and self-running artificial intelligence (AI) software to automate predictive models
- Web Application Development with Asp.Net, C#, MVC with Entity Framework, jQuery, AJAX, and Restful services using ASP.NET Web API
- Web Application Development using React.js, Next.js with Prismic for content management
- Database designing, and advanced query writing using relational database systems, such as MS SQL Server

Junior Software Engineer — Sep 2017 – Nov 2019
Smart Aspects Ltd.
Dhaka, Bangladesh

- Worked on API implementation in web applications using C# and server-side web programming frameworks including ASP. NET MVC, jQuery.
- Worked on a web project using React JS.

PUBLICATIONS

Journal Paper:

- S. Rahman, M. M. Hasan and A.k. sarkar, "Prediction of Brain Stroke using Machine Learning Algorithms and Deep Neural Network Technique,"has been published at the European Journal of Electrical Engineering and Computer Science (EJECE), Volume-7, Issue-1, Jan. 20, 2023. (Link: http://www.ejece.org/index.php/ejece/article/view/483)
- M. M. Hasan, S. Rahman and A.k. sarkar, "Deep Learning and Multiclass Machine Learning Classifier Approach for Predicting Primary Tumors" has been published at the International Journal for Multidisciplinary Research, Volume-7, Issue-1, January-February, 2023. (Link: https://www.ijfmr.com/research-paper.php?id=1564)
- S. Rahman, M. M. Hasan and A.k. sarkar, "Different approaches for the Detection of Epilepsy and Schizophrenia Using EEG Signal Analysis" has been published at the International Research Journal of Engineering and Technology (IRJET), volume 10, issue 1, Jan 2023. (Link: https://www.irjet.net/volume10-issue1)

- S. Rahman, M. M. Hasan and A.k. sarkar, "Classification of Parkinson's Disease using Speech Signal with Machine learning and Deep learning Approaches," has been been published at the European Journal of Electrical Engineering and Computer Science (EJECE), Volume-7, Issue-2, Mar. 21, 2023. (Link: https://ejece.org/index.php/ejece/article/view/488)
- M. M. Hasan, S. Rahman, F. Bu," Forecasting Container Throughput in Northwest Europe's Inland Waterways: A Data-Driven Approach" has been submitted to Journal of Traffic and Transportation Engineering (English Edition). (Under Review)

Conference Paper:

- S. Rahman, M. M. Hasan and A.k. sarkar, "Methods for Detecting Epilepsy: A Comparative Analysis on Improved Deep Learning Algorithms," In:Proceedings of the 12th International Conference on Electrical & Computer Engineering (ICECE 2022), 21-23 December 2022, Department of Electrical and Electronic Engineering Bangladesh University of Engineering and Technology Dhaka-1205, Bangladesh.
- S. Rahman, M. M. Hasan and A.k. sarkar, "Machine Learning and Deep Neural Network Techniques for Heart Disease Prediction," In: Proceedings of the 25th International Conference on Electrical & Computer Engineering (ICCIT 2022), 17-19 December 2022, organized by IEEE Bangladesh Section, Long Beach Hotel, Cox's Bazar, Bangladesh.
- S. Rahman, A.k. Sarkar and M. M. Hasan, "Various Approaches for Classification of Chronic Kidney Disease," In: Proceedings of the International Conference on 4IR for the Emerging Future-2022 (4iref), 4-5 November 2022, Science and Technology Sub-Committee of Bangladesh Awami League, The Institution of Engineers, Bangladesh (IEB), Dhaka.
- S. Rahman, M. M. Hasan and A.k. sarkar, "Comparative Analysis of Various Methods for Breast Cancer Detection," In: Proceedings of the International Conference on 4IR for the Emerging Future-2022 (4iref), 4-5 November 2022, Science and Technology Sub-Committee of Bangladesh Awami League, The Institution of Engineers, Bangladesh (IEB), Dhaka.
- S. Rahman, M.K. Hosain, A.k. sarkar, M. M. Hasan, "Comparative Analysis of Three Different Microstrip Patch Antennas on the Rat Model has been published in the 2nd International Conference on Electrical & Electronic Engineering (ICEEE 2017). (Link: https://ieeexplore.ieee.org/document/8412889)
- S. Rahman, M. M. Hasan, F. Bu, "Modelling the Impacts of Policy and Infrastructure Investments on Freight Emissions and Congestion: An Agent-Based Simulation Approach", IISE Annual Conference & Expo 2025, Atlanta, Georgia, USA.
- M. M. Hasan, S. Rahman, F. Bu," Forecasting Container Throughput in Northwest Europe's Inland Waterways: A Data-Driven Approach", IISE Annual Conference & Expo 2025, Atlanta, Georgia, USA.

TECHNICAL EXPERTISE

- **Area:** Android Mobile Application Development, Web Development, Database Management, Machine Learning, Deep Learning
- **Programming Languages:** Java, C#, Python, C++, SQL
- **Cross-Platform Language:** React.js, React Native
- **Database:** SQL Server, SQLite
- **Web Development:** React.js, Next.js, ASP.NET MVC with Entity Framework, jQuery, AJAX, JavaScript
- **CMS backend:** Prismic CMS
- **Source Code Management tools:** Git, SVN
- **Machine Learning Framework & Tools:** Tensorflow, Keras, PyTorch, OpenCV, Pandas, Numpy, matplotlib, SciPy, Scikit learn
- **Cloud Platforms:** AWS
- **Simulation Software**: MATLAB, Microwind, dsch3, Packet tracer, XFdtd

KEY PROJECTS

Digital Driver
(Zantrik)

An Artificial Intelligence-based app that may accident-proof fleet drivers with better visibility.
Worked on android app development using JAVA, developed project backend, and provided required API using C# and ASP .NET framework, MS SQL database management.

Image Processing: Smart Web Login with Face Recognition
(ETE Dept., RUET)

A desktop Application with a full-fledged login system where users can log in with a face recognition system. This project is written in C# + WinForm, which uses the EmguCV image processing library.

Automatic Traffic Light Control using a microcontroller
(ETE Dept., RUET)
Controls intelligent traffic management system with preset time scheduling. The system automatically switches on the four-way junction for direction control, providing sophisticated control and coordination to confirm that traffic moves as smoothly as possible.

Designing a Next Generation Smart Military Helmet
(IMSE Dept., TTU)
The team's vision for the NextGen intelligent military helmet was to revolutionize the current standards of ergonomic design, functionality, and user safety through a series of innovations. Each feature was thoughtfully designed to address the shortcomings of existing helmets used in military operations.

Iowa Redistricting 2023
(IMSE Dept., TTU)
The project aimed to create a congressional district map that not only aligns with federal and state guidelines but also reflects the diverse demographic composition of Iowa.

THESIS

Face Detection and Recognition Using Viola-Jones Method and Principal Component Analysis with Backpropagation Neural Network.
Supervised by: Dr. Md. Rabiul Islam
Face recognition has been done using the PCA with Euclidean distance and PCA with BPNN where the recognition ratios are 86.00% and 95.24% respectively.
Platform: MATLAB, EmguCV, C#.

UNDERGRADUATE COURSES

Data Communication & Computer Networking, VLSI, Telecommunication Engineering, Wireless & Mobile Communication, Information Theory, Digital Communication, Communication Theory, Satellite Communication & RADAR, Fiber Optic Communication, Electromagnetic fields and waves, Statistical theory of Communication, Design and Analysis of Signal and Systems Using MATLAB, Data structure, C programming, Numerical Methods in Engineering, Digital Signal Processing, Digital image processing, Engg. Mathematics- I (Differential calculus, Integral calculus, Matrix), Engg. Mathematics II (Ordinary differential equations, Partial differential equations, Series solution, Co-ordinate geometry), Engg. Mathematics-III- (Vector analysis, Fourier analysis, Laplace transforms), Engg. Mathematics-IV (Complex Variable, Statistical Analysis), Microprocessor and Microcomputer.

Ph.D. COURSES

Principles of Operations Research, Ergonomics and Design: Advanced Industrial Ergonomics, Control Theory, Machine Learning, Occupational Biomechanics: Biomechanics and Work Physiology, Reinforcement Learning, Advanced Applied Machine Learning (ongoing), Operation Research in Action Optimizing Airlines Logistics (ongoing) (till now).

TRAINING & CERTIFICATES

1) Leveraging ICT for Employment and Growth of the IT-ITES Industry (LICT - NUS)
Duration: 4 months
2) AI for Medical Diagnosis- an online non-credit course authorized by Deep Learning.AI and offered through Coursera.
Completed on 25 September, 2022.
3) Machine Learning Projects for Healthcare on Udemy.
Completed on 6 October, 2022.
4) Received Certificate for Presenting the recent project on 'Utilizing Artificial Intelligence (AI) Methods to Classify and Predict Progression of Alzheimer's Disease ' at 2nd Healthy Aging and Dementia Symposium , 2023.
5) Optimization with GAMS: Operation Research Bootcamp A-Z.
Completed on Jan 13, 2025.
6) Learn SimPy from Scratch: Build Realistic Python Simulations.
Completed on Jan 13, 2025.

AWARDS & ACHIEVEMENTS

- Education Board Scholarship in SSC (2009 - 2010)
- Education Board Scholarship in HSC (9th position in Rajshahi Board, 2011 -2012)
- University scholarship based on merit position (2012 - 2016)
- Distinguished Graduate Student Assistantship(DGSA) offered by Texas Tech University, (2023-202)

REFERENCES

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