

Mahbuba Begum

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Department of Computer Science and Engineering
Mawlana Bhashani Science and Technology University
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OBJECTIVES

- To uphold and enhance the department's reputation for quality in teaching, research, and service while also contributing to the larger academic community and encouraging the advancement of the field.
- To provide students with a strong foundation in computer science and engineering concepts and techniques.
- To help students in developing critical thinking and problem-solving skills that are essential for success in their future careers.
- To prepare students for careers by engaging them in Software Development Project & Industrial Tour.
- To conduct research in a particular field of knowledge such as image security.

PROFESSIONAL EXPERIENCE

Department of Computer Science and Engineering (CSE), Mawlana Bhashani Science and Technology University (MBSTU), Tangail-1902, Bangladesh

Designation : **Professor**
Department : Computer Science and Engineering
Working period : From 30/06/2025 to till now
Working Hour : 38 hours per week

Designation : **Associate Professor**
Department : Computer Science and Engineering
Working period : From 30/06/2021 to 29/06/2025
Working Hour : 38 hours per week

Designation : **Assistant Professor**
Department : Computer Science and Engineering
Working period : From 22/06/2015 to 29/06/2021

Working Hour : 38 hours per week
Designation : **Lecturer**
Department : Computer Science and Engineering
Working period : From 29/04/2013 to 21/06/2015
Working Hour : 38 hours per week

Responsibilities :

- Preparing and delivering lectures and conducting tutorials and laboratory sessions for undergraduate and graduate students.
- Preparing and marking essays, assignment, presentations, and examinations.
- Setting examination questions (in-course and final) and invigilating final exams.
- Participating in curriculum reform, academic planning, and the establishment of course and degree requirements.
- Advising students on academic and associated issues.
- Supervising work programs of graduate students.
- Supervising students for Software Development Project & Industrial Tour.
- Conducting research in a particular field of knowledge (5-6 students per year).
- Simulating and guiding class discussions, class activities, and group works.
- Participating in syllabus development and curriculum revision of the department.
- Attending departmental and faculty meetings, conferences, and seminars.

RESEARCH EXPERIENCE

Publications list:

Journal Paper

1. **Mahbuba Begum** and Jannatul Ferdush (June, 2026), "Opportunities and Challenges of Explainable AI (XAI) in Health Care: A Review," Journal of Computer and Communications, SCRIP, 14, 71-86.
2. Jannatul Ferdush, **Mahbuba Begum**, and Mohammad Shorif Uddin (May, 2026), "A Machine-Learning and GA-Optimized Encrypted LL₃ Watermarking Scheme in the DWT Domain," Multimedia Tools and Applications, Springer Nature, 85, 546. **(Scopus Indexed)**
3. **Mahbuba Begum**, Fauzia Yasmeen, Mohammad Shorif Uddin, Jannatul Ferdush, Sumaita Binte Shorif, Taminul Islam, Anjuman Naher Jui, and Md. Marufur Rahman (Nov, 2025), "A Biometric Authentication Framework Based on Image Watermarking," Chinese Journal of Information Fusion, Institute of Central Computation and Knowledge Inc (ICCK), 2(4), 340-355.
4. Tasnim Bill Zannah, Sadia Islam Tonni, Md. Alif Sheakh, Mst. Sazia Tahosin, Afjal Hossan Sarower, and **Mahbuba Begum** (May, 2025), "Comparative Performance Analysis of Ensemble Learning Methods for Fetal Health Classification," Informatics in Medicine Unlocked, Elsevier. **(Scopus Indexed)**
5. Md. Alif Sheakh, Mst. Sazia Tahosin, Mohammad Jahangir Alam, and **Mahbuba Begum** (Jan, 2025), "Optimizing Medical Image Analysis through MVITX on Multiple Datasets with Explainable AI," Neural Computing and Applications, Springer Nature. **(Scopus Indexed)**
6. **Mahbuba Begum**, Sumaita Binte Shorif, Mohammad Shorif Uddin, Jannatul Ferdush, Tony Jan, Alistair Barros, Md Whaiduzzaman (Jan, 2024). "Image Watermarking Using Discrete Wavelet Transform and Singular Value

Decomposition for Enhanced Imperceptibility and Robustness,” Algorithms, MDPI, vol. 17, no. 1: 32, pp. 1-20. **(Scopus and ESCI Indexed)**

7. Taminul Islam, Md. Alif Sheakh, Md. Rezwane Sadik, Mst. Sazia Tahosin, Md. Musfiqur Rahman Foysal, Jannatul Ferdush, **Mahbuba Begum** (Jan, 2024), “Lexicon and Deep Learning-Based Approaches in Sentiment Analysis on Short Texts,” Journal of Computer and Communications, vol. 12, pp. 11-34.
8. Mst. Sazia Tahosin, Md. Alif Sheakh, Taminul Islam, Rishalatun Jannat Lima, **Mahbuba Begum** (2023), “Optimizing Brain Tumor Classification Through Feature Selection and Hyperparameter Tuning in machine learning models,” Informatics in Medicine Unlocked, Elsevier. **(Scopus Indexed)**
9. Jannatul Ferdush, **Mahbuba Begum**, Sakib Tanvir Hossain (July, 2023), “ChatGPT and Clinical Decision Support: Scope, Application, and Limitations,” Ann Biomed Eng, Springer. **(Scopus Indexed)**
10. **Mahbuba Begum**, Jannatul Ferdush, and Mohammad Shorif Uddin (2022), “A Hybrid Robust Watermarking System based on Discrete Cosine Transform, Discrete Wavelet Transform, and Singular Value Decomposition,” Journal of King Saud University-Computer and Information Sciences, Elsevier, 2022. **(SCIE and Scopus Indexed)**
11. **Mahbuba Begum** and Mohammad Shorif Uddin (2021), “Towards the Development of an Effective Image Watermarking System,” Security and Privacy (Wiley), Vol. 5 (2), November 2021. **(ESCI Indexed)**
12. Jannatul Ferdush, **Mahbuba Begum**, and Mohammad Shorif Uddin (2021), “Chaotic Lightweight Cryptosystem for Image Encryption,” Advances in Multimedia, Hindawi (Now in Wiley), Vol. 2021, 5527295, 2021. **(ESCI and Scopus Indexed)**
13. **Mahbuba Begum** and Mohammad Shorif Uddin (2021), “Implementation of Secured and Robust DFT-Based Image Watermark through Hybridization with Decomposition Algorithm,” SN Computer Science, Springer Nature, vol. 2 (221), April, 2021. **(Scopus Indexed)**
14. **Mahbuba Begum** and Mohammad Shorif Uddin (2021), “Multiple Image Watermarking with Discrete Cosine Transform,” Journal of Computers and Communications, Scientific Research Publishing, Vol. 9, Issue 3, pp. 88-94, 2021.
15. **Mahbuba Begum** and Mohammad Shorif Uddin (2020), “Analysis of Digital Image Watermarking Techniques through Hybrid Methods,” Advances in Multimedia, Hindawi (Now in Wiley), Vol. 2020, 7912690, 2020. **(ESCI and Scopus Indexed)**
16. **Mahbuba Begum** and Mohammad Shorif Uddin (2020), “Digital Image Watermarking Techniques: A Review,” Information, MDPI, Vol. 11, Issue 2, 110, 2020. **(ESCI and Scopus Indexed)**
17. Jannatul Ferdush, Greetashree Mondol, Amrita Pritom Prapti, **Mahbuba Begum**, Mohammad Nowsin Amin Sheikh, Syed Md. Galib (Sep, 2019), “An Enhanced Image Encryption Technique Combining Genetic Algorithm and Particle Swarm Optimization with Chaotic Function,” International Journal of Computers and Applications, Taylor & Francis. **(Scopus Indexed)**
18. Md Mahmodul Hasan, **Mahbuba Begum** (May, 2018), “Performance Analysis of Tetris Game Variation Based On Shape and Time,” International Journal of Engineering Science Invention, Vol. 7, Issue 5, pp. 04-08.
19. Jannatul Ferdush, **Mahbuba Begum**, Ashiq Mahmud (November, 2017), “A New Image Encryption Technique Combining the Idea of One Time Pad with RGB value,” International Journal of Computer Applications, Vol. 178, No. 5, pp. 12-15.

20. **Mahbuba Begum**, Jannatul Ferdush, Md. Golam Moazzam (August, 2017), "A Hybrid Cryptosystem using DNA, OTP and RSA," International Journal of Computer Applications, Vol. 172, No. 8, pp. 30-33.
21. Md. Shamimul Islam, **Mahbuba Begum**, Kanija Muntarina, Md. Golam Moazzam (November, 2015), "A Robust Technique to Encrypt and Decrypt Confidential Data within Image," International Journal of Engineering Science Invention, Vol. 4, Issue 11, pp. 01-07.
22. Mehedi Hasan Talukder, Md. Mahfuz Reza, **Mahbuba Begum**, Md. Rabibul Islam, Md. Mahmudul Hasan (October, 2015), "Improvement of Accuracy of Human Blood Groups Determination using Image Processing Techniques," International Journal of Advanced Research in Computer and Communication Engineering, Vol.4, Issue 10, pp. 411-412.
23. Liton Jude Rozario, Md. Golam Moazzam, **Mahbuba Begum**, Fatema Fairouz Naowar (November, 2014), "An Improved Method of Segmentation of Medical Images that Incorporates Bias Correction," International Journal of Engineering Science Invention, Vol. 3, Issue 11, pp. 01-08.
24. **Mahbuba Begum**, Md. Golam Moazzam, Mohammad Shorif Uddin (August, 2014), "Quantitative Analysis on Robustness of FLD and PCA-based Face Recognition Algorithms," International Journal of Computer Applications, Vol. 99, No. 19, pp. 10-14.

Conference Paper

1. Fauzia Yasmeen, **Mahbuba Begum**, Mohammad Shorif Uddin (June, 2023), "A Hybrid Watermarking Technique Based on LH-HL Subbands of DWT and SVD," In: M.S. Satu, M. A. Moni, M. S. Kaiser, M.S. Arefin (eds) Machine Intelligence and Emerging Technologies. MIET 2022, 23-25 September 2022, Noakhali, Bangladesh. Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, vol 490. Springer, Cham, (**LNICST, Vol. 490, Springer**), pp. 1-14. (**Scopus Indexed**)
2. **Mahbuba Begum** and Mohammad Shorif Uddin (2023), "Notes on Image Watermarking and Steganography," Proceedings of International Conference on Information and Communication Technology for Development (ICICTD 2022), 29-30 July 2022, Khulna University of Engineering and Technology, Khulna, Bangladesh. (**Data-driven Studies on Data-Driven and Industrial Computing, Springer**), pp. 1-14.

Encyclopedia

1. **Mahbuba Begum**, Mohammad Shorif Uddin, "Digital Image Watermarking Techniques," Scholarly Community Encyclopedia, Encyclopedia-pub, entry 680, MDPI, 2020.

CORE COMPETENCIES

Computer Basics and Programming Fundamentals, Pulse and Digital Electronics, Computer Organization and Architecture, Digital System Design, Microprocessor and Micro-controller, Micro-controller and Assembly Language Lab, Software Engineering, Operating System, Data and Communication Engineering, Data and Communication Engineering lab, Computer based Numerical Methods, Digital Signal Processing, Digital Signal Processing Lab, Network Security and Cryptography, Simulation and modelling, and E-Commerce and Security.

SKILLS

Application Program : Microsoft Office (Word, Excel, Power point, Microsoft Project)
 Programming Language : C and MATLAB

AWARDS

1. Research Excellence Award 2025, Faculty of Engineering, MBSTU, 08 March, 2025.
2. Best Female Author and Presentation Award (2nd prize) in the 1st International Conference on Information and Communication Technology for Development (ICICTD 2022), 29-30 July, 2022, Khulna University of Engineering and Technology (KUET), Khulna, Bangladesh.

Fellowship

ICT Ph.D. research fellowship for 2019-2020, ICT Division, Ministry of Posts, Telecommunication and Information Technology, Dhaka, Bangladesh.

RESEARCH GRANT (List of Research Projects)

Number	Title of the Project	Donor/Sponsor	Position in the project	Year	
				From	To
1.	Entropy based Image Watermarking in DWT Domain	Research cell, Mawlana Bhashani Science and Technology University, Tangail-1902, Bangladesh	Principal Investigator	July 2025-June 2026	
2.	Notes on Biometric Authentication in Image Watermarking Techniques	Research cell, Mawlana Bhashani Science and Technology University, Tangail-1902, Bangladesh	Principal Investigator	July 2024-June 2025	

EXTRA CURRICULUR ACTIVITIES

1. Attending seminars and conferences associated with Computer Science and Engineering.
2. House Tutor (Residential Hall) for 2013-2014, Alema Khatun Bhashani Hall, Mawlana Bhashani Science and Technology University (MBSTU), Tangail-1902, Bangladesh.
3. Works as a peer reviewer of springer nature, MDPI and others.

ACHIEVEMENTS and SCHOLARSHIP

1. Program Committee Member and Reviewer, 6th International Joint Conference on Advances in Computational Intelligence IJCACI 2022, SAU Center for Research and Innovative Learning (SCRIL), South Asian University (SAU), New Delhi, India and Jahangirnagar University, Bangladesh, 15-16 October 2022.
2. Program Committee Member and Reviewer, 5th International Joint Conference on Advances in Computational Intelligence IJCACI 2021, Jahangirnagar University, Bangladesh and South Asian University (SAU), New Delhi, India, 23-24 October 2021.
3. SSC Board Scholarship (Merit-Based), Dhaka board, 2001.

SCHOLASTIC RECORD

Doctor of Philosophy in Computer Science and Engineering (CSE)

Institute : Department of Computer Science and Engineering, Jahangirnagar University, Bangladesh
Session : 2017-2018
Research Title : Image Authentication through Watermarking Techniques
Supervisor : Professor Dr. Mohammad Shorif Uddin, Department of Computer Science and Engineering, Jahangirnagar University, Dhaka-1342, Bangladesh
Qualification awarded : 13/11/2023

Master of Science in Computer Science and Engineering (CSE)

Institute : Department of Computer Science and Engineering, Jahangirnagar University, Bangladesh
Commenced date : 2011
Course completed : 2013
Qualification awarded : 05/01/2013 (academic year 2009)
CGPA : 3.88 (on a scale of 4) (4th position in order of merit)

Bachelor of Science in Computer Science and Engineering (CSE)

Institute : Department of Computer Science and Engineering, Jahangirnagar University, Bangladesh
Commenced date : 2004
Course completed : 2009
Qualification awarded : 30/12/2009 (academic year 2007)
CGPA : 3.74 (on a scale of 4) (4th position in order of merit)

Higher Secondary Certificate

Institute : Govt. Ashek Mahmud College
Board : Dhaka Board, Bangladesh
Group : Science
GPA : 4.00/5 (without counting additional subject)
4.40/5 (after counting additional subject)
Passing Year : 2003

Secondary School Certificate

Institute : Jamalpur Govt. Girls' High School
Board : Dhaka Board, Bangladesh
Group : Science
GPA : 4.75/5 (without counting additional subject)
5.00/5 (after counting additional subject)
Passing Year : 2001

PERSONAL INFORMATION

Name	:	Mahbuba Begum
Father's Name	:	Mukhlesur Rahman
Mother's Name	:	Tahera Begum
Spouse's Name	:	Md. Sohainur Rahman
Date of Birth	:	December 30, 1986
Marital Status	:	Married
Sex	:	Female
Religion	:	Islam
Blood Group	:	A+
Passport Number	:	A00003135
National ID Number	:	1487098434
Nationality	:	Bangladeshi