Curriculum Vitae of Mahtab Uddin

Assistant Professor - Mathematics Institute of Natural Sciences United International University Room No 635(A), UIU Bhaban, United City, Madani Avenue, Badda, Dhaka - 1212. E-mail: <u>mahtab.231286@gmail.com</u>, <u>mahtab@ins.uiu.ac.bd</u> Web-link: <u>http://ins.uiu.ac.bd/profiles/mahtab/</u> Mobile: +88-01550-605560, +88-01615-605560



Research Interest

My current research interests consist of modelling the systems and related topics of control theory, applications of numerical linear algebra, model-order reduction techniques, computational analysis of the behaviors of the systems arising from large-scale engineering applications, and statistical analysis of public health issues. My research involves computer-aided simulation tools to implement feasible algorithms for solving large-scale matrix equations in control system analysis and related applications.

Associate Editor

International Journal of Material and Mathematical Sciences

Peer Reviewer

- ✤ Advances in Mathematical Physics
- Advances in Science, Technology and Engineering Systems Journal
- BOHR International Journal of Smart Computing and Information Technology
- Engineering, Technology & Applied Science Research
- European Journal of Pure and Applied Mathematics
- International Journal of Applied Power Engineering
- International Journal of Automation and Smart Technology
- Journal of Applied Mathematics
- ✤ Journal of Engineering Research and Sciences
- Punjab University Journal of Mathematics
- ✤ <u>Texila International Journal of Academic Research</u>
- The European Physical Journal Plus

Journal Paper

- Md. Shafiqul Islam, Md. Mamunur Roshid, Mahtab Uddin, and Ashek Ahmed, "Modulation Instability and Dynamical Analysis of New Abundant Closed-Form Solutions of the Modified Korteweg–de Vries–Zakharov–Kuznetsov Model with Truncated M-Fractional Derivative", Journal of Applied Mathematics, Volume 2024, Article ID 1754782, September 2024.
- 2) Md. Mamunur Roshid, Mahtab Uddin, Mohammad Mobarak Hossain, and Harun-Or-Roshid, "Investigation of rogue wave and dynamic solitary wave propagations of the

M-fractional (1+1)-dimensional longitudinal wave equation in a magnetic-electroelastic circular rod", Indian Journal of Physics, Volume 98, September 2024.

- Md. Mamunur Roshid, Mosfiqur Rahman, Mahtab Uddin, and Harun Or Roshid, "Modulation Instability, Analytical, and Numerical Studies for Integrable Time Fractional Nonlinear Model through Two Explicit Methods", Advances in Mathematical Physics, Volume 2024, Article ID 6420467, August 2024.
- Sayeda Muntaha Ferdous, Syed Nur E Newaz, Shafayat Bin Shabbir Mugdha, and Mahtab Uddin, "Sentiment Analysis in the Age of Machine Learning: A Comprehensive Review", Statistics, Optimization & Information Computing, Volume 12, August 2024.
- 5) Shafayat Bin Shabbir Mugdha, Zahid Hossain Khan, Mahtab Uddin, and Ashek Ahmed, "Accurate Prediction of Bangla Text Article Categorization by Utilizing Novel Bangla Stemmer", International Journal of Automation and Smart Technology, Volume 14, Issue 1, July 2024.
- 6) *Mosammat Arifa Akter, Golam Mostafa, Mahtab Uddin, Md. Mamunur Roshid, and Harun-Or-Roshid,* "Simulation of optical wave propagation of perturbed nonlinear Schrodinger's equation with truncated M-fractional derivative", Optical and Quantum Electronics, Volume 56, June 2024.
- 7) Shafayat Bin Shabbir Mugdha, Hridoy Das, Mahtab Uddin, Md. Easin Arafat, and Md. Mahfujul Islam, "DeafTech Vision: A Visual Computer's Approach to Accessible Communication through Deep Learning-Driven ASL Analysis", Statistics, Optimization & Information Computing, Volume 12, June 2024.
- 8) Anuz Kumar Chakrabarty, Sonia Akter, **Mahtab Uddin**, Md. Mamunur Roshid, Alrazi Abdeljabbar, and Harun Or-Roshid, "Modulation instability analysis, and characterize time-dependent variable coefficient solutions in electromagnetic transmission and biological field", Partial Differential Equations in Applied Mathematics, Volume 11, June 2024.
- Mahtab Uddin, M. Monir Uddin, and Md. Abdul Hakim Khan, "Memory-Efficient Interpolatory Projection Techniques for the Stabilization of Incompressible Navier-Stokes Flows", Contemporary Mathematics, Volume 5, Issue 1, March 2024.
- 10) Sakhawat Hossain, Md. Mamunur Roshid, Mahtab Uddin, Arifa Akter Ripa, and Harun-Or-Roshid, "Abundant time-wavering solutions of a modified regularized long wave model using the EMSE technique", Partial Differential Equations in Applied Mathematics, Volume 8, August 2023.
- 11) *Mahtab Uddin and Ashek Ahmed*, "Covid-19's Economic and Healthcare Correlations to Leading Affected Countries: A Statistical Assessment", Texila International Journal of Public Health, Volume 11, Issue 2, June 2023.
- 12) *Md. Mamunur Roshid, Mahtab Uddin, and Golam Mostafa*, "Dynamical structure of optical soliton solutions for M-fractional paraxial wave equation by using unified technique", Results in Physics, Volume 51, Issue 5, June 2023.

- 13) *Mahtab Uddin*, *M. Monir Uddin, and Md. Abdul Hakim Khan*, "SVD-Krylov-based sparsity-preserving techniques to optimally stabilize the incompressible Navier–Stokes flows", International Journal of Dynamics and Control, Volume 11, Issue 6, March 2023.
- 14) Mahtab Uddin, Kazi Shawpnil, Shafayat Bin Shabbir Mugdha, and Ashek Ahmed, "A Statistical Synopsis of COVID-19 Components and Descriptive Analysis of Their Socio-Economic and Healthcare Aspects in Bangladesh Perspective", Journal of Environmental and Public Health, Volume 2023, Article ID 9738094, February 2023.
- 15) Md. Toriqul Islam, Mahtab Uddin, M. Monir Uddin, Md. Abdul Hakim Khan, and Md. Tanzim Hossain, "Sparsity-Preserving Two-Sided Iterative Algorithm for Riccati-Based Boundary Feedback Stabilization of the Incompressible Navier–Stokes Flow", Mathematical Problems in Engineering, Volume 2022, Article ID 4435167, November 2022.
- 16) Mahtab Uddin, Shafayat Bin Shabbir Mugdha, Tamanna Shermin, and Kawser Newaz Chowdhury, "An Improved Epidemiological Model for the Underprivileged People in the Contemporary Pandemics", BioMed Research International, Volume 2022, Article ID 7890821, October 2022.
- 17) Selim Hussen, Mahtab Uddin, and Md. Rezaul Karim, "An Efficient Computational Technique for the Analysis of Telegraph Equation", Journal of Engineering Advancements, Volume 3, Issue 3, September 2022, pp.104-111.
- 18) Shafayat Bin Shabbir Mugdha, Mahtab Uddin, and Md. Toriqul Islam, "Extended Epidemiological Models for Weak Economic Region: Case Studies of the Spreading of COVID-19 in the South Asian Subcontinental Countries", BioMed Research International, Volume 2021, Article ID 7787624, October 2021.
- 19) *Mahtab Uddin*, *M. Monir Uddin, and Md. Abdul Hakim Khan*, "Computationally Efficient Optimal Control for Unstable Power System Models", Mathematical Problems in Engineering, Volume 2021, Article ID 8071869, October 2021.
- 20) Mahtab Uddin, M. Monir Uddin, M. A. Hakim Khan, and Md. Tanzim Hossain, "SVD-Krylov based Sparsity-preserving Techniques for Riccati-based Feedback Stabilization of Unstable Power System Models", Journal of Engineering Advancements, Volume 2, Issue 3, August 2021, pp.125-131.
- 21) Md. Motlubar Rahman, Mahtab Uddin, M. Monir Uddin, and Laek Sazzad Andallah, "SVD-Krylov based techniques for structure-preserving reduced order modelling of second-order systems", Mathematical Modelling and Control, Volume 1, Issue 2, June 2021, pp.79-89.
- 22) Mahtab Uddin, M. Monir Uddin, and M. A. Hakim Khan, "Effect of shift parameters in rational Krylov subspace method for solving Riccati equations arise from power system models", International Journal of Material and Mathematical Sciences, Volume 3, Issue 2, April 2021, pp.43-49.
- 23) Md. Motlubar Rahman, Mohammad Monir Uddin, Laek Sazzad Andallah, and Mahtab Uddin, "Tangential interpolatory projections for a class of second-order index-1

descriptor systems and application to Mechatronics", Production Engineering Journal, Volume 15, Issue 1, November 2020, pp.09-19.

- 24) Sajid Ahmed, Zahid Hossain, Mahtab Uddin, Ghazaleh Taherzadeh, Alok Sharma, Swakkhar Shatabda, and Abdollah Dehzangi, "Accurate prediction of RNA 5hydroxymethylcytosine modification by utilizing novel position-specific gapped k-mer descriptors", Computational and Structural Biotechnology Journal, Volume 18, November 2020, pp.3528-3538.
- 25) Md. Motlubar Rahman, Mohammad Monir Uddin, Laek Sazzad Andallah, and Mahtab Uddin, "Interpolatory Projection Techniques for H₂ Optimal Structure-Preserving Model Order Reduction of Second-Order Systems", Advances in Science, Technology and Engineering Systems Journal, Volume 5, Issue 4, August 2020, pp.715-723.
- 26) A. K. Azad, M. M. Rahman, Salma Parvin, Mahtab Uddin, and M. R. Islam, "Effect of Joule parameter on MHD mixed convection in an open channel with semi-circular heater on the bottom wall", ARPN Journal of Engineering and Applied Sciences, Volume 15, Issue 1, January 2020, pp.113-121.
- 27) *Mahtab Uddin*, *M. I. Adnan, and L. C. Das*, "An algorithm for index numbers using average weighted base", International Journal of Engineering Applied Sciences and Technology, Volume 3, Issue 4, October 2018, pp.14-20.
- 28) Mahtab Uddin, Mushfika Hossain, and Md. Rashedul Islam, "Extrapolation formulae by parameterizations and their comparative analysis", The Electronic Journal of Mathematics and Technology, Volume 11, Issue 1, February 2017, pp.50-57.
- 29) *Mahtab Uddin*, "Five-point Predictor-Corrector formulae and their comparative analysis", International Journal of Innovation and Applied Studies, Volume. 8, Issue. 1, September 2014, pp.195–203.
- 30) Mahtab Uddin and M. A. Ullah, "An approach to generalized extrapolation formula based on rate of changes (derivatives)", American International Journal of Research in Science, Technology, Engineering & Mathematics, Volume 3, Issue 2, June-August 2013, pp.169-175.
- 31) *Mahtab Uddin and M. A. Ullah*, "A modified predictor-corrector formula for solving ordinary differential equation of first order and first degree", International organization of scientific research, Volume 5, Issue 5, January-February 2013, pp.21-26.

Conference Paper

- Md Habibur Rahman, A.S.M Mohiul Islam, Abdullah Ibnah Hasan, Mahtab Uddin, Ashek Ahmed, Asif Ahammad Miazee, Yamin Hossain, "YOLOv8 Image Processing for Evaluation of Stability Algorithms Based on Neural Networks: A Sports Use Case", 8th International Conference on Inventive Communication and Computational Technologies (ICICCT), Sree Sakthi Engineering College, Coimbatore, India, 14-15 June, 2024.
- 2) Md Habibur Rahman, Mahtab Uddin, Yamin Hossain, Nijam Uddin Sarkar, Md Aminul Islam, Nafees Siddique, Ashek Ahmed, and Shaikh Afnan Birahim, "Optimal

Control Problem and Its Application in COVID-19 Transmission Dynamics", 3rd International Conference on Advanced Engineering, Technology and Applications (ICAETA), University of Catania, Italy, 24-25 May, 2024.

- 3) Md. Habibur Rahman, Samar Das, Md. Abdullah, Mahtab Uddin, Md Aminul Islam, Yamin Hossain, and Abdullah Hafez Nur, "Improving Sports Categorization in WiFi-Blocked Areas: Modifying YOLO Network for All-Inclusive Sports Image Identification", 4th International Conference on Machine Learning, IoT and Big Data (ICMIB), Department of Computer Science and Engineering, GIET University, Gunupur, India, 29-31 March, 2024.
- 4) Md. Habibur Rahman, Samar Das, Mahtab Uddin, and Yeasin Reza, "Using the YOLO Network's Games Object to Classify Sports", 26th International Conference of Computer and Information Technology (ICCIT), IEEE Bangladesh Section, Cox's Bazar, Bangladesh, 13-15 December 2023. Published in IEEE Xplore, Article ID 10441418.
- 5) Mahtab Uddin, Md. Toriqul Islam, M. Monir Uddin, and Md. Abdul Hakim Khan, "Riccati-based feedback stabilization of incompressible Navier-Stokes models via reduced-order modelling by iterative rational Krylov algorithm", 25th International Conference of Computer and Information Technology (ICCIT), IEEE Bangladesh Section, Cox's Bazar, Bangladesh, 17-19 December 2022. Published in IEEE Xplore, Article ID 10054649.
- 6) Mahtab Uddin, M. A. Hakim Khan, and M. Monir Uddin, and Md. Motlubar Rahman, "Interpolatory projection technique for Riccati-based feedback stabilization of index-1 descriptor systems", International Conference on Recent Innovations in Engineering and Technology (ICRIET), Department of Electronics and Communication Engineering, Nandha Engineering College, Erode, Tamil Nadu, INDIA, 04-05 December 2020. Published in IOP Conference Series: Materials Science and Engineering, Volume 1070, Article ID 012022.
- 7) Md. Wakil Ahmad, Md. Easin Arafat, S. M. Shovan, Mahtab Uddin, Omar Faruq Osama, and Swakkhar Shatabda. "Enhanced Prediction of Lysine Propionylation Sites using Bi-peptide Evolutionary Features Resolving Data Imbalance", IEEE Region 10 Symposium (TenSymp), IEEE Bangladesh Section, Dhaka, Bangladesh, 05-07 June 2020. Published in IEEE Xplore, Article ID 9230456.
- 8) Mahtab Uddin, M. A. Hakim Khan, and M. Monir Uddin, "Efficient computation of Riccati-based optimal control for power system models", 22nd International Conference of Computer and Information Technology (ICCIT), Department of Electrical and Electronic Engineering, Southeast University, Dhaka, Bangladesh, 18-20 December 2019. Published in IEEE Xplore, Article ID 9033488.
- 9) Mahtab Uddin, M. A. Hakim Khan, and M. Monir Uddin, "Riccati based optimal control for linear quadratic regulator problems", 5th International Conference on Advances in Electrical Engineering (ICAEE), Department of Electrical and Electronic Engineering, Independent University Bangladesh, Dhaka, Bangladesh, 26-28 September 2019. Published in IEEE Xplore, Article ID 8966522.

Conference Presentation (Extended Abstract)

- Mahtab Uddin, M. Monir Uddin, and Md. Abdul Hakim Khan, "Structure-preserving SVD-Krylov approach for reduced-order modelling of second-order index-1 descriptor systems", 1st National Conference on Advances in Science and Technology (NCAST), Faculty of Science, BUET, Dhaka, Bangladesh, 07-08 December 2023.
- 2) Mahtab Uddin, M. Monir Uddin, and Md. Abdul Hakim Khan, "A frequency-restricted approach for reduced-order modelling of second-order linear time-invariant systems through the two-sided iterative algorithm", A F Mujibur Rahman-Bangladesh Mathematical Society National Mathematics Conference, Department of Mathematics, Jahangirnagar University, Savar, Bangladesh, 13-14 January 2023.
- Mahtab Uddin, Md. Toriqul Islam, and Ashek Ahmed, "A statistical analysis of dominant countries on the Covid-19 components along with their economic and healthcare affairs", A F Mujibur Rahman-Bangladesh Mathematical Society National Mathematics Conference, 13-14 January 2023.
- 4) Mahtab Uddin, M. Monir Uddin, and Md. Abdul Hakim Khan, "Structure-preserving two-sided iterative algorithm for reduced-order modelling of second-order linear timeinvariant systems", 1st International Conference on Frontier in Sciences (ICFS), Faculty of Science, BUET, Dhaka, Bangladesh, 11-12 November 2022.
- 5) Md. Toriqul Islam, Mahtab Uddin, M. Monir Uddin, and Md. Abdul Hakim Khan, "Sparsity-preserving Krylov subspace-based techniques for Riccati-based feedback stabilization of incompressible Navier-Stokes models", 1st International Conference on Frontier in Sciences (ICFS), Faculty of Science, BUET, Dhaka, Bangladesh, 11-12 November 2022.

Participant

- 1) International Conference on 4th Industrial Revolution and Beyond, Bangabandhu International Convention Center, Dhaka, Bangladesh, 10-11 December 2021.
- 2) International Virtual Conference on Progress in Mathematics towards Industrial Applications, Department of Mathematics, SRM Institute of Science and Technology, Chennai, India, 29-30 October 2021.
- International Conference on 2nd IBRO-APRC Bangladesh Associate School of Neuroscience: Fundamental of Neuroscience, Neural Disorders and Neural Engineering, United International University, Dhaka, Bangladesh, 04-08 December 2019.

Project

 Title: Computation of Optimal Control for Differential-Algebraic Equations (DAE) with Engineering Applications. This project is funded by Institute of the Advanced Research, United International University with reference to IAR/01/19/SE/18. It started on 01 October 2019 and completed on 19 October 2021.

Educational Qualification

Doctorate of Philo Institution Department Year of Passing CGPA	Bangladesh University of Engineering & TechnologyMathematics
Masters of Philoso Institution Department Year of Passing CGPA Thesis Title	 Bangladesh University of Engineering & Technology Mathematics 2020 3.81 (Out of 4.00) [Gold Medallist] Numerical Study on Continuous-time Algebraic Riccati Equations arising from Large-Scale Sparse Descriptor Systems
Masters of Science Institution Department Year of Passing GPA Thesis Title	University of ChittagongMathematics (Pure Branch)
Bachelor of Science Institution Department Year of Passing CGPA	 University of Chittagong Mathematics (Pure Branch) 2008 (Held 2009-10) 3.86 (Out of 4.00)
Institution Group Year of Passing Board GPA	 Science 2004 Comilla 4.10 (Out of 5.00)
Secondary School Institution Group Year of Passing Board GPA	Certificate Examination (S.S.C): Muslimabad High School Science 2002 Comilla 3.63 (Out of 5.00)

Language Proficiency

I have secured an IELTS band score of 6.5

Award

- 1) Gold medallist in A F Mujibur Rahman Gold Medel Award for Excellence in Mathematics for highest CGPA in the M.Phil. program from Department of Mathematics, Bangladesh University of Engineering and Technology, 2020-2021.
- 2) Best organizer in 2nd IBRO-APRC, 2019.

Computer Skill

C, C⁺⁺, COMSOL Multiphysics, Fortran, Latex, Mathematica, MATLAB, Python, and Tecplot.

Institutional Activity

- 1) Moderator of "UIU Model United Nations Club" from 1st April 2024 to date.
- TPC chair of the "Workshop on International Conference on Bangabandhu and Digital Bangladesh-2023" at "United International University, Dhaka, Bangladesh" on 28th August 2023.
- 3) Member of the executive committee of the "*UIU annual sports-2023*" during 4th-6th February 2023.
- Organizing member of the "2nd International Conference on Advanced Information and Communication Technology-2020" at "United International University, Dhaka, Bangladesh" during 28th-29th November 2020.
- Secretariat of the "2nd IBRO-APRC Bangladesh Associate School of Neuroscience: Fundamental of Neuroscience, Neural Disorders and Neural Engineering-2019" at "United International University, Dhaka, Bangladesh" during 04th-08th December 2019.
- 6) Manager of the United International University cricket team of the "12th ULAB Fair Play Cup 2019" at University of Liberal Arts Bangladesh, Dhaka, Bangladesh" during 12th-22nd March 2019.
- Organizing member of the "1st IBRO-APRC Bangladesh Associate School of Neuroscience: Translational Neuroscience and Research-2017 & Brain Symposium-2017" at "United International University, Dhaka, Bangladesh" during 23rd-27th September 2017.
- 8) Organizing member of the "International Conference on Medical Engineering, Health Informatics and Technology-2016" at "United International University, Dhaka, Bangladesh" during 17th-18th December 2016.

Departmental Activity

- 1) Member of the "Question Moderation" committee.
- 2) Member of the "Curriculum and Syllabus Revision" committee.
- 3) Member of the team selection committee for "*National Undergraduate Mathematics Olympiad*".

Training

- 1) Workshop on "Outcome-Based Education", held on August 14, 2023, at United International University, Dhaka, Bangladesh.
- 2) Seminar on "Investigating Complex Engineering Problems and Activities in the light of *OBE*", held on August 29, 2022, at United International University, Dhaka, Bangladesh.

- 3) A faculty development program "*Master Class Spoken English Course*", held from February 13, 2021, to April 11, 2021, at United International University, Dhaka, Bangladesh.
- 4) International workshop on "*Computer Vision and Application*", held on December 19, 2019, at South-East University, Dhaka, Bangladesh.
- 5) Workshop on "*Active Learning: Some Determinants*", held on July 27, 2017, at United International University, Dhaka, Bangladesh.
- 6) Seminar on "Cracking a Design Problem", held on February 11, 2017, at United International University, Dhaka, Bangladesh.
- Seminar on "Technology-Enabled Learning for 21st Century Learners: Opportunities, Challenges, and Strategies", held on 3rd December 2016 at United International University, Dhaka, Bangladesh.
- 8) Workshop on "*Assessment Strategies*", held on 2nd April 2016 at United International University, Dhaka, Bangladesh.
- 9) A faculty development program "*Centre for Excellence*", held from April 27, 2013, to May 04, 2013, at Stamford University Bangladesh, Dhaka, Bangladesh.

Experience

- 1) Assistant Professor in Mathematics, Institute of Natural Sciences, United International University, from June 09, 2018, to date.
- 2) Lecturer in Mathematics, Institute of Natural Sciences, United International University, from November 13, 2013, to June 8, 2018.
- 3) Lecturer in Mathematics (Part-time), Institute of Natural Sciences, United International University, from October 23, 2013, to November 12, 2013.
- 4) Lecturer in Mathematics, Department of Natural Sciences, Stamford University Bangladesh, from April 17, 2013, to October 22, 2013.

Personal Information

Father's Name	:	Shahid Uddin
Mother's Name	:	Mahbuba Akhter
Date of Birth	:	23 December, 1986
Nationality	:	Bangladeshi (by birth)
Marital Status	:	Married
Spouse's Name	:	Sungeda Shobnom
National ID No.	:	19861518638282930
Birth Certificate No.	:	19865114340104823
Passport No.	:	EE0200907
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Referees

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Mahfab

(Mahtab Uddin)

2) Dr. Md. Haider Ali Biswas

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4) Dr. Mohammad Monir Uddin

Associate Professor Department of Mathematics & Physics North-South University Email: monir.uddin@northsouth.edu Cell: +88-01823-600151

(My signature certifies that all information presented is complete and correct to the best of my knowledge)