CV　　Mohammad Monir Uddin　　April 2024

Introduction

Affiliation

Associate Professor
Department of Mathematics & Physics
North South University

Personal Details

Date of Birth: 11/30/1978
Nationality: Bangladeshi
Marital Status: Married

Contact

Bashundhara
Dhaka 1229, Bangladesh
✉ monir.uddin@northsouth.edu
📱 +88-01-823-600-151(with WhatsApp)

Links

 Githab
 Linkedin
 mysite.com
 Google Scholar

Education

2015	PhD in Mathematics at **Max-Planck-Institute**, Magdeburg, Germany	*Cum Laude*
2011	Master of Science in Applied Mathematics at **Stockholm University**, Stockholm, Sweden	Score above 80% marks
2003	Master of Science in Pure Mathematics at **Chittagong University**, Chittagong, Bangladesh	1st-$Class(Second)$
2001	Bachelor of Science in Mathematics at **Chittagong University**, Chittagong, Bangladesh	1st-$Class(Sixth)$

Career

May 2019 - Present	**Associate Professor**, Department of Mathematics and Physics North South University(NSU), Bangladesh
Aug 2015 - Apr 2019	**Assistant Professor**, Department of Mathematics and Physics North South University(NSU), Bangladesh
May 2015 - Aug 2015	**Assistant Professor**, Department of Mathematics American International University, Bangladesh
Aug 2011 - Apr 2015	**PhD Research Fellow** Dept. of Computational Methods in Systems and Control Theory (CSC) Max-Planck-Institute, Magdeburg, Germany
Mar 2011 - Jul 2011	**Research Assiste** Dept. of Mathematics, Stockholm University, Stockholm, Sweden
Jul 2010 - Feb 2011	**Research Assistent** for (Masters Thesis) Dept. of Mathematics, TU Chemnitz, Chemnitz, Germany
Mar 2006 - Oct 2008	**Lecturer**, Department of Natural Science Stamford University, Bangladesh

Research Interest

- Artificial Intelligence (AI) based Anatomical Diagnosis
- Model Order Reduction (MOR) of large-scale sparse Dynamical Systems
- Control Theory and it's Applications
- Iterative Methods for Large Sparse Matrix Equations
- Numerical Linear Algebra, Optimization and Scientific Computing
- Data Science and Machine Learning
- Computational Biology

Teaching Interest

- **Undegraduate Maths:** calculus, Linear algebra, Differential Equations (ODE and PDE), Probability, Numerical methods etc.
- **Advance Maths:** Numerical Linear Algebra, Control Theory, Optimization, Model Order Reduction (MOR) etc.
- **Machine Learning:** Data Science, Statistical Methods, Deep Learning etc.
- **Applications:** Mathematical Modeling, Computational Biology, Image Processing etc.
- **Programing:** Matlab, Python, R programing etc.

Projects

- **Title:** Development of the Efficient Algorithms to optimize the Solar Thermal state of the Photovoltaic Panel by analyzing the generated dynamic mathematical model.
  Project ID: CTRG-22-SEPS-06
  Funded by: NSU CTRG, $ 5000 (Five Thousands USD)
  Duration: 1 year (Started from January 2023), GOING ON

- **Title:** Model Order Reduction for Aircraft Wing Shape Optimization
  Project ID: CTRG-21-SEPS-15
  Funded by: NSU CTRG, $ 5000 (Five Thousands USD)
  Duration: 1 year (Started from January 2022), DONE

- **Title:** Developing Mathematical Algorithms and Software for the Model Reduction of Large-Scale Dynamical Systems
  Project ID: MS20191055
  Funded by: Bangladesh Ministry of Education (BANBEIS), $ 150000 (Fifteen Thousand USD)
  Duration: 3 years (Started from November 2019), DONE

- **Title:** Approximation of large-scale dynamical system over a Limited Time Interval
  Project ID: CTRG-20-SEPS-20
  Funded by: NSU CTRG, $ 5000 (Five Thousands USD)
  Duration: 1 year (Started from January 2021), DONE

- **Title:** Computation of Optimal Control for Differential-Algebraic Equations (DAE) with Engineering Applications **Project ID:** IAR/01/19/SE/18
  Funded by: Institute of Advance Research, United International University, $ 4000 (Four Thou-

sands USD)
Duration: 1.5 years (Started from October 01, 2019), DONE

- Title: *Structure Preserving Model Reduction of Large-Scale Second-Order Dynamical Systems Using the PDEG Method and Application to Some Real Problems.* **Project ID:** CTRG-20-SEPS-20
Funded by: NSU CTRG, $ 4800 (four Thousands and Eight hundred USD)
Duration: 1 year (Started from March 2019), DONE

- Title: *Computational Methods for Approximation of Large-Scale Descriptor Systems*
Project ID: N/A
Funded by: Tailor and Francis Group
Duration: 2 years, (Started from March 2017), DONE

Publications

- Book 01 (Publisher: CRC Press (Taylor and Francis Group))
- Book Chapters 06
- Journal 25
- Conferences 25

Citation Indices (on April 2024)

Google Scholar

Citations	827
H-index	13
Link	[Click Over]()

SCOPUS

Citations	321
h-index	7
Link	[Click Over]()

Some Journal Publications

- (Spinger-Q_1) Mahtab Uddin, **M. M. Uddin**, and M. A. Hakim Khan, *SVD-Krylov based sparsity-preserving techniques to optimally stabilize the incompressible Navier-Stokes flows*, International Journal of Dynamics and Control, 2023. pp. 1-11.

- (Elsvier-Q_1) Bin Iqbal, K.I., Du, X., **M. M. Uddin**, Uddin, M.F., *Balanced truncation for reduced-order modeling of Piezoelectric Tonpilz Transducer on the limited frequency interval*, Applied Mathematical Modelling, 2022, 111, pp. 63–77

- (Elsvier-Q_1) Du, X., Iqbal, K.I.B., **Uddin, M.M.**, Fony, A.M., Hossain, M.T., Ahmad, M.I. and Hossain, M.S., 2021. Computational techniques for H_2 optimal frequency-limited model order reduction of large-scale sparse linear systems. Journal of Computational Science,2021, 55, p.101473.

- (IEEE-Q_1) Shuzan, M.N.I., Chowdhury, M.H., Hossain, M.S., Chowdhury, M.E., Reaz, M.B.I.,**Uddin, M.M.**, Khandakar, A., Mahbub, Z.B. and Ali, S.H.M., A novel non-invasive estimation of respiration rate from motion corrupted photoplethysmograph signal using machine learning model. IEEE Access, 2021, 9, pp.96775-96790.

- (Elsvier-Q_1) **M. M. Uddin**, *Structure Preserving Model Order Reduction of a Class of Second-Order Descriptor Systems via Balanced Truncation*, Applied Numerical Mathematics, 2020, 152, pp. 185–198.

- (IET-Q_1) **M. M. Uddin**, *Gramian-based model-order reduction of constrained structural dynamic systems*, Mathematical and Computer Modelling of Dynamical Systems, IET Control Theory & Applications, Vol. 12 (17), 2018, pp. 2337 - 2346.
  DOI: 10.1049/iet-cta.2018.5580

- (Tailor & Francis-Q_3) P. BENNER, J. SAAK AND **M. M. Uddin**, *Structure preserving MOR for large sparse second order index 1 systems and application to a mechatronic model*, Mathematical and Computer Modelling of Dynamical Systems, Tailor & Francis, Vol. 22 (6), August 2016, pp. 509–523.
  DOI: 10.1080/13873954.2016.1218347

- (Spinger-Q_2) **M. M. Uddin**, J. SAAK, B. KRANZ AND P. BENNER, *Computation of a compact state space model for an adaptive spindle head configuration with piezo actuators using balanced truncation*, Production Engineering (Spinger), vol. 6, September 2012, pp. 577–586.
  DOI: 10.1007/s11740-012-0410-x

> Note: Please see details here:
> http://www.northsouth.edu/faculty-members/seps/mathematics-physics/dr.
> -mohammad-monir-uddin.html

Contributary/Invited Talks/Lectures

- Invited talks/Lectures 08
- International Conferences talks 12
- Poster Presentations 03
- International workshops 03

Invited Talks/ Lectures

- **5 Jan 2024:** Computational Methods for Model Order Reduction of Large-Scale Sparse Descriptor Systems, Shanxi University, Taiyuan, China

- **5 Jan 2024** Computational Methods for Model Order Reduction of Large-Scale Sparse Descriptor Systems, Shanxi University, Taiyuan, China

- **25 Dec 2023** Model Order Reduction of Large-Scale Sparse Descriptor Systems. Yangtze University, Jingzhou, China

- **(12-23) Jun 2023:** Numerical Linear Algebra in Engineering and Data Science. International Summer Program, Shanghai University, China

- **(13-14) Jan 2023** Recent Updates on Model Order Reduction of Large-Scale Descriptor Systems. A F Mujibur Rahman-Bangladesh Mathematical Society National Mathematical Conference 2022, Jahangir Nagar University, Dhaka

- **(13-25) Jun 2022:** Numerical Linear Algebra with Application in Engineering and Data Science. International Summer Program, Shanghai University, China

- **(21 Jun-2 Jul) 2021:** Linear Algebra and Linear Control Systems. International Summer Program, Shanghai University, China

- **(14-24) Apr 2020:** Linear Algebra and Linear Control Systems. International Summer Program, Shanghai University, China

Supervision and Reviewing Thesis

PhD Theses Supervision

- Thesis Title: Krylov Subspace Techniques for Structure-Preserving Model Reduction of Large-Scale Sparse Second-Order Differential Algebraic Equations (DAEs)
  Name of Student: Md. Motlubar Rahman
  University: Jahangirnagar University, Bangladesh
  Status: Completed in 2022 (April)

- Thesis Title: Frequency Limited structure preserving Model order reduction of large-scale dynamical systems
  Name of Student: Mahtab Uddin
  University : Bangladesh University of Engineering Technology
  Status: On Going

- Thesis Title: Numerical studies on model order reduction of Biological system
  Name of Student: Md. Shafiqul Islam
  University :Jahangirnagar University, Bangladesh
  Status: On Going

- Thesis Title: Model reduction of large-scale second-order system with application in Engineering
  Name of Student: Md. Saiduzzaman
  University: Jahangirnagar University, Bangladesh
  Status: On Going

Masters Theses Supervision

- Computational techniques for Riccati-based feedback stabilization of large-scale sparse index-2 descriptor system
  Name of Student: Md. Toriqul Islam
  University: Bangladesh University of Engineering Technology (BUET)
  Status: Completed on February 2022

Theses Review

- 2017: Reviewed an M.Phil thesis titled *Efficient solution of Lyapunov equation for descriptor system and application to model order reduction* from Dept. of Mathematics, Bangladesh University of Technology

- 2020: Reviewed an M.Phil thesis titled *Numerical Study on Continuous-Time Algebraic RICCATI Equations Arising from Large-Scale Sparse Descriptor Systems* from Dept. of Mathematics, Bangladesh University of Technology

Service to the University

- **2021-2023:** CPC (Career Placement Center) Coordinator for SEPS (School of Engineering and Physical Science) at NSU
- **Since 2022:** Member of NSU-SEPS Scientific Review Committee
- **Since 2020:** NSU Graduate Program Coordinator
- **2020-2023:** Coordinator of Biweekly Colloquium for the Department of Mathematics and Physics, NSU
- **Since 2016:** Coordinator of Mat125 (Linear Algebra) for the Department of Mathematics and Physics, NSU

Service to the Community

- Guest Editor of a special issue titled: *Numerical Linear Algebra for Large-Scale Dynamical Systems* of AIMS - Mathematical Biosciences and Engineering, 2020
- Editorial Board Member, Journal of Applied Mathematics and Computation, Since 2019
- Reviewing internationally renowned journals
- Session Co-Chair (ICFS – 2022), Buet, 11 November 2022
- Session Chair 1st National Conference on Advances in Science and Technology, Faculty of Science, Buet, 7-8 December 2023
- Session Co-Chair (ICCE – 2019), Coxs Bazar, 7-9 February, 2019
- Chair Panel Session in SUSCOM 2022, 6-7 Aug 2022, IUBET
- IPC Local Chairs, LSMS2024 & ICSEE2024 September 13-15 2024, Suzhou, China

Membership

Since 2021	Asian Simulation Societies (ASIASIM)
Since 2020	Life member of the Alumni Association of German University Bangladesh (AAGUB)
Since 2020	Life member of Chittagong University Math Alumni Association (CUMAA)
2012 - 2015	Member of International Max-Plank Research School (IMPRS), Magdeburg Germany
2012 - 2015	Member of Society of Industrial and Applied Mathematics (SIAM) Student- Chapter, Magdeburg, Germany
2013 - 2014	SIAM academic member, Philadelphia USA
2012 - 2015	Member of Magdeburg International PhD Students Magdeburg, Germany
2013 - 2015	Member of Matrix Equations Team at MPI Magdeburg, Magdeburg, Germany