

Tarun Sheel
Dept. of Mathematics & Statistics
Memorial University of Newfoundland
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PROFILE

Citizenship Canada, Bangladesh
Languages Multilingual, fluent in English, Bengali, Basic in Japanese & French

EDUCATION

- 2008 PhD, Mechanical Engineering (CFD), Keio University, Japan
Major Research: Numerical Analysis, Scientific Computing, Computational Fluid Dynamics
Thesis: Development of a Fast Vortex Method for Fluid Flow Simulation using Special-Purpose Computers
- 1997 MSc (Thesis), Applied Mathematics, University of Dhaka, Bangladesh
Major Research: Numerical Algorithm and Computational Mathematics
Thesis: Rational Approximants Generated by Pade Approximation and u-transform
- 1995 BSc (Hons.), Mathematics, University of Dhaka, Bangladesh.
- 2022 Language Interpreter Training: Conestoga College, Cambridge, ON

WORK EXPERIENCE

ACADEMIC POSITION (TEACHING)

- 9/2019 -** Teaching Assistant Professor of Mathematics, Memorial University of Newfoundland, Canada
- 2015 - 2019** Visiting Assistant Professor of Mathematics, Memorial University of Newfoundland, Canada
- July - Aug, 2018** Visiting Professor of Mathematics, IAUSS
Shanghai University of Finance and Economics, Shanghai, China (Invited)
- July - Aug, 2017** Visiting Prof. of Mathematics, IAUSS
Shanghai Jiao Tong University, Shanghai, China (Invited)
- 2014 - 2015** Assistant Professor of Mathematics, Trent University, Canada
- 2012 - 2014** Sessional Instructor of Mathematics, University of Windsor, Canada
- Apr.-May 2008** Visiting Assistant Professor of Mechanical Engineering, Keio University, Japan
- 1998 - 2013** Professor of Mathematics, Shahjalal University of Science & Technology, Bangladesh

COURSE TAUGHT

2015-Now **Memorial University, NL, Canada**

MATH 1000	Calculus I
MATH 1001	Calculus II
MATH 1050	Finite Mathematics I
MATH 1090	Algebra & Trigonometry
MATH 2000	Calculus III (Fall 2022)
MATH 2090	Mathematics of Finance
STAT 2500	Statistics for Business and Arts Students
CIV 3440	Mathematics for Civil Engineering I

Jul.-Aug., 2017 & 2018 **IAUSS, Shanghai, China**

MATH 11	Calculus I
MATH 21	Calculus II
MATH 23	Linear Algebra
Online Course	MATH 26: Matrix Algebra, MATH 27: Introduction to Analysis, MATH 41: Differential Equations

2014-2015 **Trent University, ON, Canada**

MATH 2110H	Calculus II
MATH 2120H	Calculus III
MATH 2350H	Linear Algebra II
MATH 3150H	Linear Programming
MATH 3350H	Partial Differential Equations
MATH 3770H	Analysis II-Complex Analysis

2012-2014 **University of Windsor, ON, Canada**

MATH 215	Vector Calculus
PHY 350	Classical Mechanics I

1998-2012 **Shahjalal University of Sci. & Tech., Sylhet, Bangladesh**

MAT 112	Calculus I
MAT 121	Linear Algebra
MAT 122	Calculus II
MAT 123	Basic Algebra
MAT 212	Differential Equations I
MAT 213	Calculus III
MAT 222	Complex Analysis
MAT 312	Discrete Mathematics
MAT 315	FORTTRAN Programming
MAT 324	Mathematical Methods
MAT 326	Numerical Analysis
MAT 414	Mathematical Programming
MAT 418	Computational Fluid Dynamics
MAT 423	Differential Equations II
MAT 425	Numerical Methods for Boundary Value Problems

RESEARCH INTERESTS

Numerical Methods, Mathematical Modeling, Scientific Computing, Particle and Grid Methods, Computational Fluid Dynamics, Heat Transfer, Domain Decomposition, Geotechnical Engineering.

ACADEMIC POSITION (RESEARCH)

Apr. 2016	Visiting Researcher in Mathematics, Memorial University of Newfoundland, Canada
Feb. 2016	Visiting Scholar of Mechanical Engineering, McMaster University, Canada
Jun-Aug 2014	Research Associate, Mechanical Engineering, McMaster University, Canada
2012 - 2014	Research Associate, Mathematics and Mechanical Engineering, University of Windsor, Canada
2011 - 2012	Assistant Director, High-performance Computing Lab, Shahjalal University of Science & Technology, Bangladesh
2010	Research Assistant, University of Rostock, Germany
2009 - 2010	Research Assistant, University Catholique de Louvain, Belgium
2008	Visiting Research Scientist, Kyushu University, Japan
2003 - 2007	Research Assistant, Keio University, Japan
2000 - 2003	System Administrator (Computing Lab), Shahjalal University of Science & Technology, Bangladesh

SELECTED PUBLICATIONS

1. B. Debnath, B. Hawlader, S. Dutta, T. K. Sheel. Performance of Computational Fluid Dynamics and Finite Element Methods for Modeling Downslope Displacement of Failed Soil from Submarine Landslides. *Geohazards* 7, June 3-6, 2018, Canmore, Alberta, Canada.
2. T. K. Sheel, Optimization Techniques of FMM for Vortex Method Calculations. The IV AMMCS International Conference (AMMCS 2017), August 21 - 25, 2017, Waterloo, ON, Canada (Invited).
3. T. K. Sheel. G. Nasif, R. Balachandar & R. Barron, Flow alteration around a wall-mounted bluff body using a front splitter plate, *CFDSC 2015*, Waterloo, Canada, June 7-10, 2015.
4. T. K. Sheel. G. Nasif, R. Balachandar & R. Barron, Breakdown of the horseshoe vortex around a wall-mounted bluff body using a front splitter plate, *CFDSC 2014*, Toronto, Canada, June 1-4, 2014.
5. T. K. Sheel, Acceleration of vortex method calculation using FMM and MDGRAPE-3, *Progress In Electromagnetic Research B*, Vol. 27, 327-348, 2011. <http://www.jpier.org/pierb/pier.php?paper=10091804>
6. T. K. Sheel, and S. Obi, High Performance Computing Techniques for vortex method calculations, *J. of Theo. & Comp. Fluid Dyn*, DOI 10.1007/s00162-009-0149-y, Vol 24, pp. 175-179, 2010, Springer Verlag
7. T. K. Sheel, R. Yokota, K. Yasuoka, S. Obi, The study of colliding vortex rings using a special-purpose computer and FMM, *Trans. JSCES*, No. 20080003, 2008
8. R. Yokota, T. K. Sheel, S. Obi, Calculation of isotropic turbulence using pure lagrangian vortex method, *Journal of Computational Physics*, 226, 1589-1606, 2007
9. T. K. Sheel, K. Yasuoka, S. Obi, Fast vortex method calculation using a special-purpose computer; *Computers and Fluids*, Vol. 36, pp. 1319-1326, 2007.

STUDENT SUPERVISION

- 2020-2021** Xuan Suo, MSc in Applied Mathematics, MUN
2016-2018 Binoy Debnath, MASc, Civil Engineering, MUN (Co-supervised with B. Hawlader)

CONFERENCE PRESENTATIONS

- 2018** (with B. Debnath*, B. Hawlader, & S. Dutta), Geohazards 7, June 3-6, 2018, Canmore, Alberta, Canada.
2017 The IV AMMCS International Conference, Aug. 21 - 25, 2017, Waterloo, ON, Canada (Invited)
2016 10th International Conference on Scientific Computing and Applications, June 6 - 10, 2016, Fields Institute, Toronto, ON, Canada (Invited)
2015 AMMCS - CAIMS Joint Congress 2015, June 7 - 12, 2015, Waterloo, Canada
2014 CSME/CFDSC Joint Conferenc 2014, June 1 - 4, 2014, Toronto, ON, Canada
2011 17th Mathematics Conference (BMS2011), December 22 - 24, 2011, Dhaka, Bangladesh.
2009 10th USNCCM, July 16-19, 2009, Columbus, Ohio, USA.
2008 IUTAM Symposium, 150 Years of Vortex Dynamics, Oct. 12-16, 2008, Copenhagen, Denmark.
2009 16th International Mathematics Conference of Bangladesh Mathematical Society, Dec. 17-19, BUET, Dhaka, Bangladesh.
2007 9th APRU Doctoral Students Conference, July 14-18, Far Eastern National University, Vladivostok, Russia.
2005 (with R. Yokota, K. Yasuoka & S. Obi), 4th ICVFM2008, Apr. 21-23, Daejeon, South Korea.
2007 8th APRU Doctoral Students Conference, Jul. 30 - Aug. 3, Keio University, Japan.
2007 (with K. Yasuoka & S. Obi), International Conference on Computational Methods (ICCM2007) April 4-6, Hiroshima, Japan.
2005 (with K. Yasuoka & S. Obi), 3rd International Conference on Vortex Flows & Vortex Models (ICVFM2005), Nov. 21-23, Yokohama, Japan.
2002 (with A. Halder), ICAMMP2002, Jan. 4-7, SUST, Sylhet, Bangladesh.
2000 (with A. Halder), ICAMMP2000, Sep. 4-7, SUST, Sylhet, Bangladesh.
1999 (with J. Ghosh* & A. Halder), 11th International Mathematics Conference, BMS, Dec. 11-13, Chittagong, Bangladesh.
1998 (with A. Halder), Mini-Workshop on Applied Mathematics, Sep. 1-3, SUST, Sylhet, Bangladesh.

INVITED CONGRESS/WORKSHOPS/SEMINARS

- 2020** FYMSiC Conference at UTM 2020(Virtual Conference). First-year Math & Stats in Canada: Creating Epsilons of Improvement. University of Toronto Mississauga, May 23, 2020.
2020 Wiley STEM Teaching and Learning Workshop, Hyatt Regency Coral Gables, Florida, USA, February 2020.
2019 AARMS Industrial Problem Solving Workshop (AARMS IPSWs), University of New Brunswick, Fredericton, NB, Canada, May 2019.
2019 First Year Maths and Stats in Canada: Time to Rethink Our Curriculum?, University of Alberta, Edmonton, AB, Canada, May 3-5, 2019.
2019 Teaching and Learning Conference, MUN, St. John's, NL, Canada, May 1-2, 2019.
2019 MUN Software Carpentry Workshop - Programming in Python, MUN, Apr. 22-23, 2019, St. John's, NL
2018 First Year Univ. Maths. Across Canada: Facts, Community and Vision, The Fields Institute, Toronto, ON, Canada, Apr. 27-29, 2018.
2017 The IV AMMCS 2017, Aug. 20-25, 2017, Waterloo, Canada (Invited)
2016 Graduate Seminar, Mathematics, Memorial University of Newfoundland, Canada
2016 ICSCA 2016, The Fields Institute, Toronto, Canada
2016 Summer School on Highperformance Computing, May 30 - June 3, Hamilton, ON, Canada
2014 Summer School on Highperformance Computing, May 26-30, Waterloo, ON, Canada
2013 Department Colloquium, Mathematics & Statistics, University of Windsor, Canada
2012 HEQEP Seminar, Dept. of Mathematics, Shahjalal University of Science & Technology, Bangladesh
2009 Courant Institute, New York University, New York, USA
2008 Faculty of Mathematics, Kyushu University, Fukuoka, Japan
Faculty of Engineering, Kyushu University, Kyushu, Fukuoka, Japan

THESIS EXAMINER

- 2022** Effects of undrained shear strength profile on retrogressive landslides in sensitive clays
Piash Saha, Master of Engineering, MUN.
- 2020** Asphaltene deposition simulation in porous media during CO_2 injection using Lattice Boltzmann Method
Navid Eskandari, Master of Engineering, MUN.
- 2019** Numerical Modeling of Oblique Pipeline-Soil Interaction in Dense Sand
Md Anan Morshed, Master of Engineering, MUN.
- 2019** Numerical Modeling of Submarine Landslide Impact on Offshore Free-Spanning Pipeline
Diponkar Saha, Master of Engineering, MUN.
- 2018** Numerical Modeling of Progressive and Retrogressive Failure of Submarine Slopes with a Sensitive Clay Layer - Shubhagata Roy, Master of Engineering, MUN.

PROFESSIONAL ACTIVITIES

Referee/Reviewer for:

1. **Springer & Verlag:** Journal of Theoretical and Computational Fluid Dynamics, since 2010
2. **Elsevier:** Journal of Computational and Applied Mathematics, Since 2009
3. **Wiley:** Numerical Methods for Partial Differential Equations, Since 2010
4. **EMW:** PIER-Progress In Electromagnetic Research, Since 2011
5. **Taylor & Francis:** Applicable Analysis, Since 2012
6. **BioMed:** Biomedical Engineering, Since 2012

Member of Professional Body:

1. Bangladesh Mathematical Society (BMS) (Member No. A - 192).
2. International Association of Engineers (IAENG) (Member No. 62943).

FELLOWSHIPS AND AWARDS

- 2016** VP Research Grant, Grenfell Campus, Memorial University, NL, Canada (Role: PI)
- 2014** Research Fellow, McMaster University, Hamilton, ON, Canada
- 2012 - 2014** Research Fellow, University of Windsor, Windsor, ON, Canada
- 2010** Research Fellowship, University of Rostock, Rostock, Germany
- 2009 - 2010** Postdoctoral Fellow, Universite' Catholique de Louvain, Belgium
- 2007 - 2008** Amano Scholarship, PhD Fellowship, Keio University, Japan
- 2003 - 2008** KLL Research Award, Keio University, Japan
- 2003 - 2006** Yoshida Scholarship Foundation, PhD Fellowship, Keio University, Japan
- 2000 - 2002** Research Grant: Ministry of Science and Technology, Bangladesh.
"Establishment of high-performance computing laboratory"
- 1995 - 1997** Merit Scholarship with Gold Medal, University of Dhaka, for BSc and MSc (First Place)

COMMUNITY AND VOLUNTEER SERVICE

- 2015 - Present** Member, Dhaka University Alumni Association of Canada, Toronto, ON, Canada
- 2012 - Present** Member, Jagannath Hall Alumni Association of Canada, Toronto, ON, Canada
- 2000-2012** Advisor, Shahjalal University Debating Society(SUDS), Sylhet, Bangladesh
- 2003-2008** Member, Shorolipi Cultural Academy, Tokyo, Japan
- 2000-present** Past President, Rotaract Club of Dhaka North, RI District 3280 (now 3281), Bangladesh
- 1998-1999** President, Rotaract Club of Dhaka North, RI District 3280 (now 3281), Bangladesh

UNIVERSITY SERVICE/COMMITTEE MEMBER

2019-Now	Executive Member, MUNFA, MUN
2019-Now	Member, High School and University Competition Committee, Maths & Stats, MUN
4/2019	Academic Advising, High School Students (Prospective first year students of MUN), Gonzaga High School and Holy Heart of Mary High School, St. John's, NL, Canada
4/2019	Marker, Euclid Test, High School Math Competitions, MUN, St. John's, NL, Canada
3/2019	Session chair/judge, ALDRICH Conference, MUN, St. John's, NL, Canada
3/2019	Marker, Blundon Test, High School Math Competitions, MUN, St. John's, NL, Canada
3/2018	Marker, Blundon Test, High School Math Competitions, MUN, St. John's, NL, Canada
2015	Member, Executive Committee, Trent University Faculty Association, ON, Canada
2000-2008	Examiner, Dept. of Mathematics, University of Dhaka, Dhaka, Bangladesh
200-2003	Examiner, National University of Bangladesh, Gazipur, Bangladesh
1998-2012	Member & coordinator, First year admission test committee, SUST, Sylhet, Bangladesh
1998-2012	Chair & member, Exam and curriculum committee, Mathematics, SUST, Sylhet, Bangladesh
2002	Member, Organizing Committee, ICAMMP2002, SUST, Bangladesh
2000	Member, Organizing Committee, ICAMMP2000, SUST, Sylhet, Bangladesh
1998	Member, Organizing Committee, Mini-Workshop, Applied Mathematics, SUST, Bangladesh
1992 - Present	Life member, Bangladesh Mathematical Society, Dhaka, Bangladesh

COMPUTER/PROGRAMMING SKILLS

Programing Languages	Python, FORTRAN, C/C++ both in Windows and UNIX Platform, Eclipse, MATLAB, MAPLE, MATHEMATICA, OpenMP/MPI, MGDGRAPEs
Commercial Software(s)	ANSYS Fluent and CFX, OpenFoam(basic), StarCCM+(basic), Tecplot, GAMBIT, ICEM-CFD, Gmsh, MINITAB, LINDO
Operating Systems	Microsft Office, Linux, MacOX, IOS, Latex, HTML
Web Design	Typo3, Lycos, Googlesite, Tripod

EXTRACURRICULAR ACTIVITIES

Traveling, Listening to Music, Swimming, Reading

REFERENCES

References available upon request



Tarun Sheel