Md Sarowar Morshed

Operations Research Engineer, Intel

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Research Interests

Primary Mathematical Optimization, Operations Research, Randomized Linear Algebra
Secondary Machine Learning, Mathematics of Data Science

Education

2017–2022 **PhD**, *Northeastern University*, Boston, MA, **`Industrial Engineering`**.
2015–2017 **MS**, *University of Central Florida*, Orlando, FL, **`Applied Mathematics`**.
2010–2014 **BS**, *Bangladesh of University of Engineering & Technology*, Dhaka, Bangladesh, **`Industrial & Production Engineering`**.

Employment

2022–present **Operations Research Engineer**, *Intel Corporation*, Chandler, AZ.
2017–2022 **Graduate Research Assistant**, *Northeastern University*, Boston, MA.
2015–2017 **Graduate Teaching Assistant**, *University of Central Florida*, Orlando, FL.
2015–2016 **Mathematics Tutor**, *Mathematics Assistance & Learning Lab*, University of Central Florida, Orlando, FL.
2014–2015 **Project Engineer**, *ILO-BGMEA-BUET "Fire Safety Assessment Project"*, Dhaka, Bangladesh.
2011–2011 **Intern**, *Square Pharmaceuticals*, Dhaka, Bangladesh.

Journal Articles

2022 Md Saiful Islam, **Md Sarowar Morshed**, and Md. Noor-E-Alam (2022). "A Computational Framework for Solving Nonlinear Binary Optimization Problems in Robust Causal Inference". In: *INFORMS Journal on Computing*.

2021 **Md Sarowar Morshed**, Md Saiful Islam, and Md. Noor-E-Alam (Mar. 2021). "Sampling Kaczmarz-Motzkin method for linear feasibility problems: generalization and acceleration". In: *Mathematical Programming*.

Md Sarowar Morshed, Chrysafis Vogiatzis, and Md. Noor-E-Alam (July 2021). "A Primal-Dual Interior Point Method for a Novel Type-2 Second Order Cone Optimization Problem". In: *Results in Control and Optimization*, p. 100042.

2020 **Md Sarowar Morshed** and Md. Noor-E-Alam (2020). "Generalized affine scaling algorithms for linear programming problems". In: *Computers & Operations Research* 114, p. 104807.

2019 Md Saiful Islam and **Md Sarowar Morshed** et. al (Oct. 2019). "Robust policy evaluation from large-scale observational studies". In: *PLOS ONE* 14.10, pp. 1–19.

Md Sarowar Morshed, Md Saiful Islam and Md. Noor-E-Alam (Oct. 2019). "Accelerated Sampling Kaczmarz Motzkin algorithm for the linear feasibility problem". In: *Journal of Global Optimization*.

2018 Mozammel Mia and **Md Sarowar Morshed** et. al (2018). "Prediction and optimization of surface roughness in minimum quantity coolant lubrication applied turning of high hardness steel". In: *Measurement* 118, pp. 43–51.

2016 **Sarowar Morshed Ripon** (Sept. 2016). "A Generalized Inverse Binomial Summation Theorem and Some Hypergeometric Transformation Formulas". In: *International Journal of Combinatorics* 2016, p. 4546509.

2015 **Sarowar Morshed Ripon** (2015). "Generalization of a class of logarithmic integrals". In: *Integral Transforms and Special Functions* 26.4, pp. 229–245.

2014 **Sarowar Morshed Ripon** (2014). "Generalization of harmonic sums involving inverse binomial coefficients". In: *Integral Transforms and Special Functions* 25.10, pp. 821–835.

Under Review Articles

2022 **Md Sarowar Morshed** (2022b). *ALS: Augmented Lagrangian Sketching Methods for Linear Systems*.

Md Sarowar Morshed (2022c). *Augmented Newton Method for Optimization: Global Linear Rate and Momentum Interpretation*.

Md Sarowar Morshed (2022g). *Penalty & Augmented Kaczmarz Methods For Linear Systems & Linear Feasibility Problems*.

2021 **Md Sarowar Morshed** (2021). *Sketch & Project Methods for Linear Feasibility Problems: Greedy Sampling & Momentum*.

Md Sarowar Morshed and Sabbir Ahmad (2021). *Stochastic Steepest Descent Methods for Linear Systems: Greedy Sampling & Momentum*.

Md Sarowar Morshed and Md. Noor-E-Alam (2021). *Heavy Ball Momentum Induced Sampling Kaczmarz Motzkin Methods for Linear Feasibility Problems*.

Technical Reports

2022 **Md Sarowar Morshed** (Aug. 2022e). "Kaczmarz Method For Linear Equations: A Review".

Md Sarowar Morshed (Sept. 2022f). "Lagrangian Sketching Methods For Large-Scale Optimization".

2020 **Md Sarowar Morshed** (Jan. 2020). "Logarithmic Integrals: A Review from Gradshteyn and Ryzhik to Recent Times".

Working Articles

2022 **Md Sarowar Morshed** (Oct. 2022a). *ALS: Augmented Lagrangian Sketching Methods for Linear Feasibility Problems (**In preparation**)*.

Md Sarowar Morshed (Dec. 2022d). *Greedy Sketch & Project Methods for Least Square Problems (**In preparation**)*.

Teaching Experience

Tutor, UCF Intermediate Algebra ▪ College Algebra ▪ Pre-Calculus ▪ College Trigonometry

TA, UCF MAS 5145 - Advanced Linear Algebra & Matrix Theory ▪ MAP 6207 - Optimization Theory ▪ MAP 6385 - Applied Numerical Mathematics

TA, NEU IE 6200 - Engineering Probability & Statistics ▪ IE 4520 - Stochastic Modeling

Awards & Grants

Awards	**Ferretti & Yamamura Award for Excellence in Research**	*Northeastern University*
	Chairs Fellowship Award	*Northeastern University*
	Research Assistantship	*Northeastern University*
	Teaching Assistantship	*University Of Central Florida*
Grants	**Travel Grant, Summer School**	*University of Maryland*
	Travel Grant, Summer School	*Université de Montréal*

Technical Skills

Advanced	Python, MATLAB, R, Gurobi, CPLEX.
Intermediate	AMPL, Julia, R Markdown, SolidWorks, Ansys, Auto-Cad.
Novice	C++, SQL, Tableau.
Expert	LaTeX

Relevant Coursework

Mathematics	Advanced Linear Algebra & Matrix Theory ▪ Mathematical Analysis 1 & 2 ▪ Scientific Computing ▪ Applied Numerical Analysis ▪ Probability & Statistics ▪ Ordinary & Partial Differential Equations ▪ Applied & Computational Harmonic Analysis ▪ Integral Equations & Calculus of Variation.
Operations Research	Linear Programming & Extensions ▪ Convex Optimization ▪ Probabilistic Operations Research ▪ Logistics-Warehousing & Scheduling ▪ Network Analysis & Advanced Optimization.
CS	Machine Learning ▪ Data Mining in Engineering ▪ Neural Network & Deep Learning.

Professional Services

Elsevier	*Omega: The International Journal of Management Science*	
	Linear Algebra and Its Applications	
	Computers & Operations Research	*Technical Reviewer*
	Applied Numerical Mathematics	
	Computers & Industrial Engineering	
Springer	*Journal of Scientific Computing*	
	Numerical Algorithms	
	Journal of Signal Processing Systems	*Technical Reviewer*
	International Journal of Data Science and Analytics	
	Calcolo	
ACM	*International Conference on Computing Advancements, 2020*	
SIGAPP	*2nd International Conference on Computing Advancements, 2021*	*Technical Reviewer*

Languages

Bengali	Native
English	Fluent
Hindi	Proficient
Arabic	Beginner

Miscellaneous

Work Authorization	F-1 OPT
Hobbies	Computer Chess (Leela Chess Zero, Stockfish), Sudoku, Math. Olympiad.