SHIGENG SUN

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EDUCATION

Northwestern University, *McCormick School of Engineering* — Evanston, IL, United States
Ph.D, *Engineering Sciences and Applied Mathematics* — Sept. 2019 - June 2024 (expected)
Advisor: Dr. Jorge Nocedal — GPA: 3.83/4.0 (as of Jan. 2023)

New York University, *Courant Institute of Mathematical Sciences* — New York City, NY, United States
Master of Science, *Mathematics* (with graduate thesis) — Aug. 2017 - June 2019
Advisor: Dr. Michael J. Shelley — GPA: 3.87/4.0

The George Washington University, *Columbian College of Arts and Sciences* — Washington, DC, United States
Bachelor of Science, *Mathematics (top of the class, with honors), Economics (with honors)* — Aug. 2013 - June 2017
Advisors: Dr. Svetlana Roudenko, Dr. Yanxiang Zhao — GPA: 3.71/4.0

INDUSTRY EXPERIENCE

Virtu Customer Market Making (formerly KCG), *Virtu Financial* — New York City, NY, United States
Quantitive Strategiest Intern — June. 2023 - Aug. 2023
Market Event Predictor, Factor Model Signal (in prod)

Amazon AWS AI Labs, Amazon — Santa Clara, CA, United States
Applied Scientist Intern — Sept. 2023 - Dec. 2023 (exp)
Large Language Model Training; Scientific ML for PDEs

COMPUTING SKILLS

Programming Languages:	Python, MATLAB, C; Basic knowledge with SQL, R, CUDA
Packages & Tools:	PyTorch, Pandas, scikit-learn, TensorFlow, JAX, LAPACK/LAPACKe, OpenMP
Software & Others:	MS Office, iWork, LaTeX, Mathematica, Maple, Stata,

PAPERS, PREPRINTS AND TECHNICAL REPORTS

S. Sun, R. Byrd, J. Nocedal, *A Globally Convergent Sequential Quadratic Programming Algorithm for Equality Constrained Optimization Problems Under Uncertainties*, Preprint.

S. Sun, J. Nocedal, *A Trust Region Method for the Optimization of Noisy Functions.* Published in *Mathematical Programming* (2023).

S. Sun, Y. Xie, *Stochastic Ratios Tracking Algorithm for Large Scale Machine Learning.* Preprint in review.

S. Sun, J. Nocedal, *An Algorithm for Solving System of Nonlinear Equations with Rank Deficient Jacobians and Inaccuracies.* Preprint.

Y. Lou, **S. Sun**, J. Nocedal, *Nonlinear Optimization in the Presence of Noise: Applications, Noise Models and Problem Structure.* Preprint submitted to *SIAM Journal Of Scientific Computing* (2024).

S. Sun, R. Byrd, J. Nocedal, *On the Global Convergence of Byrd-Omojokun SQP Method for Equality Constrained Optimization.* Preprint.

S. Sun, S. Fürthauer, M. J. Shelley, *Instabilities in Active Contracting Networks*. Thesis (2019).

S. Sun, S. Roudenko, *Modeling The International Links Between Interbank Offered Rates Among Different Markets Through A Wavelet Analysis Approach*. Technical Report (2017).

ACADEMIA RESEARCH EXPERIENCE

Prof. Nocedal's Research Group, *Department of IEMS*, Northwestern University   Evanston, IL, United States
Optimization under uncertainties, Optimization in Machine Learning   Sept. 2020-Present

Biophysical Modeling Group, *Flatiron Institute*, Simons Foundation   New York City, NY, United States
Numerical Solution to Large PDE Systems, Computational Fluid Mechanics   Jan. 2018-Aug. 2019

Prof. Zhao's Research Group, Prof. Roudenko's Research Group, *Department of Math*, GWU   Washington, DC
Data and Signal Analysis, Mathematical Finance, Biophysics Simulations   Jan. 2015-May 2017

TEACHING/ SERVICE EXPERIENCE

Center of Optimization and Statistical Learning, Northwestern University   Evanston, IL, United States
Student Administrator   Aug. 2021-Present

Courant Institute of Mathematical Sciences, New York University   New York City, NY , United States
Graduate Faculty Adjunct   Sept. 2017– May 2019

Columbian College of Arts and Sciences, The George Washington University   Washington , DC, United States
Undergraduate Teaching Assistant   Aug. 2016– Jan. 2017

AWARDS AND FELLOWSHIPS

Walter P. Murphy Fellowship   Sept. 2019
Ruggles Undergraduate Mathematics Prize (top of the class in mathematics award)   May. 2017
Data MASTER fellowship by National Science Foundation   Dec. 2015, June 2016

PROFESSIONAL SOCIETIES AND ACTIVITIES

Society for Industrial and Applied Mathematics (SIAM),
Student Member   Aug. 2016- Current

American Mathematical Society (AMS),
Student Member   Aug. 2016- Current

The Institute for Operations Research and the Management Sciences (INFORMS),
Student Member   Sept. 2020- Current

Pi Mu Epsilon Mathematics Honorary Society,
Chapter President   May 2015- May 2017

INVITED CONFERENCES AND PRESENTATIONS

INFORMS Conference on Optimization,   Greenville, SC, United States
Session Speaker   Mar. 2022

ACMNTW Conference (Midwest Optimization Conference),   Evanston, IL, United States
Presenter   May 2022

INFORMS Annual Meeting,   Indianapolis, IN, United States
Session Speaker   Oct. 2022

SIAM Conference on Optimization,   Seattle, WA, United States
Session Chair, Session Speaker   May 2023

INFORMS Conference on Optimization,   Houston, TX, United States
Session Speaker   Mar. 2024