

# SHIGENG SUN

✉ gengyuntx@gmail.com 🔗 <https://shigengsun.github.io>

## EDUCATION

<b>Northwestern University</b> , <i>McCormick School of Engineering</i> Ph.D, <i>Engineering Sciences and Applied Mathematics</i> Advisor: Dr. Jorge Nocedal	Evanston, IL, United States Sept. 2019 - June 2024 (expected) GPA: 3.83/4.0 (as of Jan. 2023)
<b>New York University</b> , <i>Courant Institute of Mathematical Sciences</i> Master of Science, <i>Mathematics</i> (with graduate thesis, top 2 / 70) Advisor: Dr. Michael J. Shelley	New York City, NY, United States Aug. 2017 - June 2019 GPA: 3.87/4.0
<b>The George Washington University</b> , <i>Columbian College of Arts and Sciences</i> Bachelor of Science, <i>Mathematics (top of the class, with honors), Economics (with honors)</i> Advisors: Dr. Svetlana Roudenko, Dr. Yanxiang Zhao	Washington, DC, United States Aug. 2013 - June 2017 GPA: 3.71/4.0

## INDUSTRY EXPERIENCE

<b>Virtu Customer Market Making (formerly KCG)</b> , <i>Virtu Financial</i> Quantitative Strategist Intern <i>Market Event Predictor; Factor Model Signal (in prod)</i>	New York City, NY, United States June. 2023 - Aug. 2023
<b>Amazon AWS AI Labs</b> , Amazon Applied Scientist Intern <i>Large Language Model Training; Scientific ML for PDEs</i>	Santa Clara, CA, United States Sept. 2023 - Dec. 2023 (exp)

## COMPUTING SKILLS

<b>Programming Languages:</b>	Python, MATLAB, C; Basic knowledge with SQL, R, CUDA
<b>Packages &amp; Tools:</b>	PyTorch, Pandas, scikit-learn, TensorFlow, JAX, LAPACK/LAPACKe, OpenMP
<b>Software &amp; Others:</b>	MS Office, iWork, L <sup>A</sup> T <sub>E</sub> X, 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 to be submitted to *SIAM Journal of Optimization* (2023).
- Y. Lou, **S. Sun**, J. Nocedal, *Nonlinear Optimization in the Presence of Noise: Applications, Noise Models and Problem Structure*. Preprint to be submitted to *Optimization Methods and Software* (2023).
- 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, Technical Report (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

---

<b>Prof. Nocedal's Research Group</b> , <i>Department of IEMS</i> , Northwestern University <i>Optimization under uncertainties, Optimization in Machine Learning</i>	Evanston, IL, United States Sept. 2020-Present
<b>Biophysical Modeling Group</b> , <i>Flatiron Institute</i> , Simons Foundation <i>Numerical Solution to Large PDE Systems, Computational Fluid Mechanics</i>	New York City, NY, United States Jan. 2018-Aug. 2019
<b>Prof. Zhao's Research Group, Prof. Roudenko's Research Group</b> , <i>Department of Math</i> , GWU <i>Data and Signal Analysis, Mathematical Finance, Biophysics Simulations</i>	Washington, DC Jan. 2015-May 2017

## TEACHING/ SERVICE EXPERIENCE

---

<b>Center of Optimization and Statistical Learning</b> , Northwestern University <i>Student Administrator</i>	Evanston, IL, United States Aug. 2021-Present
<b>Courant Institute of Mathematical Sciences</b> , New York University <i>Graduate Faculty Adjunct</i>	New York City, NY , United States Sept. 2017– May 2019
<b>Columbian College of Arts and Sciences</b> , The George Washington University <i>Undergraduate Teaching Assistant</i>	Washington , DC, United States Aug. 2016– Jan. 2017

## AWARDS AND FELLOWSHIPS

---

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

## PROFESSIONAL SOCIETIES AND ACTIVITIES

---

<b>Society for Industrial and Applied Mathematics (SIAM)</b> , <i>Student Member</i>	Aug. 2016- Current
<b>American Mathematical Society (AMS)</b> , <i>Student Member</i>	Aug. 2016- Current
<b>The Institute for Operations Research and the Management Sciences (INFORMS)</b> , <i>Student Member</i>	Sept. 2020- Current
<b>Pi Mu Epsilon Mathematics Honorary Society</b> , <i>Chapter President</i>	May 2015- May 2017

## INVITED CONFERENCES AND PRESENTATIONS

---

<b>INFORMS Conference on Optimization</b> , <i>Session Speaker</i>	Greenville, SC, United States Mar. 2022
<b>ACMNTW Conference (Midwest Optimization Conference)</b> , <i>Presenter</i>	Evanston, IL, United States May 2022
<b>INFORMS Annual Meeting</b> , <i>Session Speaker</i>	Indianapolis, IN, United States Oct. 2022
<b>SIAM Conference on Optimization</b> , <i>Session Chair, Session Speaker</i>	Seattle, WA, United States May 2023
<b>INFORMS Conference on Optimization</b> , <i>Session Speaker</i>	Houston, TX, United States Mar. 2024