

# ZHENAN FAN

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## EDUCATION

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- University of British Columbia** Sep. 2019 - Present  
**Ph.D.** in Computer Science  
Supervisor: Michael P. Friedlander  
Area: Optimization, Machine Learning and Signal Processing
- University of British Columbia** Sep. 2017 - August. 2019  
**M. S.** in Computer Science
- University of Toronto** Sep. 2013 - June 2017  
**B.S.** in Math and Computer Science (double major), Overall GPA: 3.98/4.0

## EXPERIENCE

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- Associate Researcher** June. 2020 - Present  
*Huawei Vancouver Research Center* *Research and Software Development*
- Develop the interior point linear programming solver OptVerse-IPM.
  - Develop a presolve method for the simplex linear programming solver OptVerse-SIM, which ranked No. 1 on Mittelman's benchmark datasets.
  - Develop a contribution evaluation framework for federated learning.

## PUBLICATIONS

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- **Z. Fan**, H. Jeong, B. Joshi, M. Friedlander. Polar Deconvolution of Mixed Signals. To appear in *IEEE Transactions on Signal Processing*, 2022.
- **Z. Fan**, H. Fang, Z. Zhou, J. Pei, M. Friedlander, C. Liu, Y. Zhang. Improving Fairness for Data Valuation in Federated Learning. In *IEEE International Conference on Data Engineering (ICDE)*, 2022.
- H. Fang, **Z. Fan**, M. Friedlander. Fast convergence of the stochastic subgradient method under interpolation. In *International Conference on Learning Representations (ICLR)*, 2021.
- **Z. Fan**, Y. Sun, H. Jeong, M. Friedlander. Atomic decomposition via polar alignment: the geometry of structured optimization. In *Foundations and Trends in Optimization*, 3(4):280–366, 2020.
- H. Fang, **Z. Fan**, Y. Sun, M. Friedlander. Greed Meets Sparsity. In *International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2020.
- **Z. Fan**, Y. Sun, M. Friedlander. Bundle-type method for dual atomic pursuit. In *Asilomar Conference on Signals, Systems, and Computers (ACSSC)*, 2019.

## PREPRINTS

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- **Z. Fan**, H. Fang, M. Friedlander. A dual approach for federated learning. Submitted.
- **Z. Fan**, H. Fang, Z. Zhou, J. Pei, M. Friedlander, Y. Zhang. Fair and efficient contribution valuation for vertical federated learning. Submitted.
- **Z. Fan**, H. Fang, M. Friedlander. Safe-screening rules for atomic-norm regularization. Submitted to *Open Journal of Mathematical Optimization*, 2021 (Minor Revision).

## OPEN-SOURCE SOFTWARES

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- **AtomicOpt.jl**: Julia package for solving the a class of non-convex structured optimization problem. <https://github.com/MPF-Optimization-Laboratory/AtomicOpt.jl>.
- **FedDCD.jl**: Julia package for solving the horizontal federated learning problem. <https://github.com/ZhenanFanUBC/FedDCD.jl>.
- **VerFedLogistic.jl**: Julia package for solving the vertical federated learning problem. <https://github.com/ZhenanFanUBC/VerFedLogistic.jl>.

## HONORS AND AWARDS

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- UBC Computer Science Merit Scholarship C\$5000×5, 2017-2022
- UBC International Tuition Awards C\$3000×5, 2017-2022
- University of Toronto Dean's list for all semesters, 2013-2016
- William Lowell Putnam Mathematical Competition, Rank 273 out of 4275, top 3rd in UofT, 2015
- U of T Hackathon 3rd Place, C\$3000 (with W. Xiao, Y. Chen), 2016
- University of Toronto Excellent Awards C\$6000 2016 Summer

## TECHNICAL STRENGTHS

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<b>Programming</b>	C++, Julia, Python
<b>Personal Page</b>	<a href="https://zhenanf.me">https://zhenanf.me</a>