

Tunan Wang

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Education

BS	Shandong University	09/2016 - 06/2020
	• Bachelor of Science, major in Statistics, School of Mathematics	
MS	University of Michigan	08/2021 - 04/2023
	• Master of Science, major in Applied Statistics, Department of Statistics	
Ph.D.	University of Wisconsin-Madison	08/2023 -
	• Major in Computer Science, School of Computer, Data & Information Sciences	

Research & Internship Experience

University of Wisconsin-Madison , advised by Prof. Vivak Patel	Madison, WI U.S. 12/2023 -
<ul style="list-style-type: none"> Non-smooth optimization: Investigate operational mechanisms of non-smooth conditions in conventional optimization methods for deep learning. <ul style="list-style-type: none"> Address gradient calculation errors at non-smooth points by developing corrective strategies. Enhance model reliability to contribute to safer AI applications with broad social impact. Stochastic linear algebra package: <code>RLinearAlgebra.jl</code>. Implementing algorithms and features in the Julia package <code>RLinearAlgebra.jl</code>. <code>RLinearAlgebra.jl</code> is a Julia package that implements standard Randomized Linear Algebra algorithms and provides means for performance comparison. 	
University of Michigan , advised by Prof. Albert S. Berahas	Ann Arbor, MI U.S. 07/2022 -
<ul style="list-style-type: none"> Developing an adaptive method on distributed optimization settings. To be specific, we are developing a kind of stochastic variant (w.r.t. constraints) of SQP (sequential quadratic programming) which can solve distributed problems without manually setting any hyperparameters. 	
Tianjin University , Part-time RA in the associate professor Runliang Dou's group	Tianjin CN 09/2020 - 03/2021
<ul style="list-style-type: none"> Research on the topic of operation research and management, take part in the Industrial Big Data Competition on the topic of "prediction of reservoir's flow of hydropower station". 	
First Capital Securities Co., Ltd. , Summer intern at Company Business Department	ShenZhen, Guangzhou CN 07/15/2019 - 09/13/2019
<ul style="list-style-type: none"> Prepare reception meetings and record customer conversations. Conduct systematic investigations and compile evaluation reports based on public company information. Organize real estate company indicators from rating reports. Draft internal rating reports and daily bond price change summaries. 	
Shandong University , Undergraduate Science and Technology Innovation Fund Project	Jinan, Shandong CN 05/2018 - 05/2019
<ul style="list-style-type: none"> Group leader of 4-person research group. Used traditional N-W Kernel Regression to process the data with an outlier, then added L1, L2 Regularization and regularized Huber loss function to the original Algorithm to make the outcome with higher robustness and alleviate the overfitting problem. The results show that the curve draw by the Algorithm which used Hu- 	

ber loss function and regularized with L1 regulation has better sparsity and runs faster than the others

China Securities Co., Ltd., Summer intern at Fixed Income Department

Beijing

CN

07/16/2018 - 08/31/2018

- Collect bond market data and prepare summary reports.
- Assist in creating special and in-depth reports on credit debt.
- Prepare meeting reports and bond issuance notices.
- Draft contracts.

Projects

R package PertGD

[PertGD](#)

- Implement four gradient-based methods to escape saddle points:
 - Perturbed Gradient Descent
 - Perturbed Accelerated Gradient Descent
 - Faster Perturbed Gradient Descent
 - Faster Perturbed Accelerated Gradient Descent
- Role: Developer
- Language Used: R

Julia package RLinearAlgebra.jl

[RLinearAlgebra.jl](#)

- RLinearAlgebra.jl is a Julia package that implements standard Randomized Linear Algebra algorithms and provides means for performance comparison.
- Role: Maintainer & Developer
- Language Used: Julia

Course project: optimization algorithms

[IOE-511](#)

- An investigation of the performance of unconstrained optimization algorithms and different line search methods.
- Language Used: Matlab

Teaching

Teaching assistant, University of Wisconsin-Madison

- CS 220, Data Science Programming I (Fall 2023, Spring 2024)
- CS 320, Data Science Programming II (Fall 2024)

Skills

Programming languages: Python, Julia, Matlab, R

Technologies: Optimization algorithm developer