



Shengjun(Daniel) Zhang

RESEARCH ASSISTANT · CONTROL · OPTIMIZATION · STATISTICAL LEARNING

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| 🎓 Shengjun(Daniel) Zhang

"There is nothing more practical than a good theory."

Education

UNT (University of North Texas)

PH.D. MAJOR IN ELECTRICAL ENGINEERING

- Minor in Business Management

Denton, Texas, U.S.A

Jan. 2018 - May 2022

NYU (New York University)

M.S. IN ELECTRICAL ENGINEERING

- Robotic Control

New York, New York, U.S.A

Jan. 2015 - Jan. 2017

CAU (China Agricultural University)

B.S. IN AUTOMATION OF HONORS PROGRAM WITH *Cum Laude*

- Control Theory

Beijing, China

Sep. 2010 - Jul. 2014

Research Interests

Learning

Statistical Learning, Machine Learning, Reinforcement Learning

Control & Optimization

Control System, Convex Optimization, Non-convex Optimization, Distributed Optimization

Power System

DERs with Transactive Approaches

Skills

Programming

Julia, Python, MATLAB

Languages

Mandarin, English

Work Experience

Pacific Northwest National Laboratory

RESEARCH SCIENTIST INTERN

- Optimization and Control Group
- Supervisor: Dr. Ke Ma

Remote

Jun. 2021 - Aug. 2021

Professional Experience

University of North Texas

RESEARCH/TEACHING ASSISTANT

- Optimization, Signal, Control, and Algorithms Research (OSCAR) Laboratory, Department of Electrical Engineering
- Supervisor: Dr. Colleen Bailey & Dr. Tao Yang (Former advisor)

Denton, Texas, U.S.A

Jan. 2018 - present

Huazhong University of Science and Technology

VISITING RESEARCHER

- Key Laboratory of Image Processing and Intelligent Control of Education Ministry, School of Artificial Intelligence and Automation
- Supervisor: Dr. Ye Yuan

Wuhan, China

May 2018 - Jul. 2018

Zhejiang University

VISITING RESEARCHER

- Group of Networked Sensing and Control, College of Control Science and Engineering
- Supervisor: Dr. Junfeng Wu

Hangzhou, China

Jul. 2018 - Jul. 2018

New York University

RESEARCH ASSISTANT

- Control/Robotics Research Laboratory, Tandon School of Engineering
- Supervisor: Dr. Farshad Khorrami


New York, New York, U.S.A

Jan. 2016 - Jul. 2016

Publications


JOURNAL ARTICLES [9]

Communication Compression for Distributed Nonconvex Optimization

Xinlei Yi, Shengjun Zhang, Tao Yang, Tianyou Chai, Karl H Johansson
IEEE Transactions on Automatic Control (Under Review). 


Under Review

Zeroth-Order Stochastic Coordinate Methods for Decentralized Non-convex Optimization

Shengjun Zhang, Tan Shen, Yunlong Dong, Heng Zhang
IEEE Signal Processing Letters (Under Review). 


Under Review

A Primal-Dual SGD Algorithm for Distributed Nonconvex Optimization

Xinlei Yi, Shengjun Zhang, Tao Yang, Tianyou Chai, Karl H Johansson
IEEE/CAA Journal of Automatica Sinica 9.5 (2022) pp. 812–833. 
DOI: 10.1109/JAS.2022.105554


2022

Sublinear and Linear Convergence of ADMM for Distributed Nonconvex Optimization

Xinlei Yi, Shengjun Zhang, Tao Yang, Tianyou Chai, Karl H Johansson
IEEE Transactions on Control of Network Systems (2022). 
DOI: 10.1109/TCNS.2022.3186653

2022

Zeroth-order Algorithms for Distributed Stochastic Nonconvex Optimization

Xinlei Yi, Shengjun Zhang, Tao Yang, Karl H Johansson
IFAC Automatica 142 (2022) p. 110353. 
DOI: 10.1016/j.automatica.2022.110353


2022

Variance aware reward smoothing for deep reinforcement learning

Yunlong Dong, Shengjun Zhang, Xing Liu, Yu Zhang, Tan Shen
Neurocomputing 458 (2021) pp. 327–335. 
DOI: 10.1016/j.neucom.2021.06.014


2021

Event-triggered Distributed Optimization Algorithms (in Chinese)

Tao Yang, Lei Xu, Xinlei Yi, Shengjun Zhang, Ruijuan Chen, Yuzhe Li
ACTA Automatica Sinica 47.x (2021) pp. 1–11. 
DOI: 10.16383/j.aas.c200838


2021

Linear Convergence of First- and Zeroth-Order Primal-Dual Algorithms for Distributed Nonconvex Optimization

Xinlei Yi, Shengjun Zhang, Tao Yang, Tianyou Chai, Karl H. Johansson
IEEE Transactions on Automatic Control (2021) pp. 1–8. 
DOI: 10.1109/TAC.2021.3108501

2021


A Magnetic Nanoparticle Based Nucleic Acid Isolation And Purification Instrument for DNA Extraction of Escherichia coli O157: H7

Yahui Chen, Jianhan Lin, Qin Jiang, Qi Chen, Shengjun Zhang, Li Li
Journal of nanoscience and nanotechnology 16.3 (2016) pp. 2296–2300. 
DOI: 10.1166/jnn.2016.10933

2016

CONFERENCE PROCEEDINGS [11]

Accelerated Zeroth-order Algorithm for Stochastic Distributed Nonconvex Optimization

Shengjun Zhang, Colleen P. Bailey
2022 American Control Conference (ACC) 
DOI: 10.23919/ACC53348.2022.9867306


Atlanta, GA, United States
2022

Event-Triggered Proportional-Integral Algorithms for Distributed Optimization (Invited Session Extended Abstract)

Tao Yang, Lei Xu, Xinlei Yi, Shengjun Zhang, Yuzhe Li
40th Chinese Control Conference (CCC)

Shanghai, China
2021

A Primal-Dual Algorithm for Distributed Sparse Principal Component Analysis

Shengjun Zhang, Colleen P. Bailey
2021 IEEE International Conference on Data Science and Computer Application 
DOI: 10.1109/ICDSCA53499.2021.9650142

Dalian, China
2021

Accelerated Primal-Dual Algorithm for Distributed Nonconvex Optimization

Shengjun Zhang, Colleen P. Bailey

2021 IEEE Symposium Series on Computational Intelligence (SSCI) 

DOI: 10.1109/SSCI50451.2021.9660023

Orlando, FL, United States

2021

Convergence Analysis of Nonconvex Distributed Stochastic Zeroth-order Coordinate Method

Shengjun Zhang, Yunlong Dong, Dong Xie, Lisha Yao, Colleen P. Bailey, Shengli Fu

60th IEEE Conference on Decision and Control (CDC) 

DOI: 10.1109/CDC45484.2021.9683475

Austin, TX, United States

2021

Exponential Convergence for Distributed Smooth Optimization Under the Restricted Secant Inequality Condition

Xinlei Yi, Shengjun Zhang, Tao Yang, Tianyou Chai, Karl H Johansson

21st IFAC World Congress 

DOI: 10.1016/j.ifacol.2020.12.383

Berlin, Germany

2020

Linear Convergence for Distributed Optimization Without Strong Convexity

Xinlei Yi, Shengjun Zhang, Tao Yang, Tianyou Chai, Karl H Johansson

59th IEEE Conference on Decision and Control (CDC) 

DOI: 10.1109/CDC42340.2020.9304381

Jeju Island, Republic of Korea

2020

Obstacle Avoidance and Navigation Utilizing Reinforcement Learning with Reward Shaping

Shengjun Zhang, Colleen P. Bailey

SPIE Artificial Intelligence and Machine Learning for Multi-Domain Operations Applications II 

DOI: 10.1117/12.2558212

California, United States

2020

Optimal Control Under Communication Constraints for Multi-agent Unmanned Vehicles

Shengjun Zhang, Colleen P. Bailey

SPIE Artificial Intelligence and Machine Learning in Defense Applications II 


DOI: 10.1117/12.2574176

Edinburgh, United Kingdom

2020

Event-Triggered Control for Consensus of Multi-Agent Systems with Nonlinear Output and Directed Topologies

Xinlei Yi, Shengjun Zhang, Tao Yang, Junfeng Wu, Karl Henrik Johansson

38th Chinese Control Conference (CCC) 

DOI: 10.23919/ChiCC.2019.8865399

Guangzhou, China

2019

Computational Convergence Analysis of Distributed Optimization Algorithms for Directed Graphs

Shengjun Zhang, Xinlei Yi, Jemin George, Tao Yang

15th IEEE International Conference on Control and Automation (ICCA)  (Best Student Paper Shorten List)

DOI: 10.1109/ICCA.2019.8899565

Edinburgh, Scotland

2019

Honors & Awards

2021 **Student Travel Award**, The 60th IEEE Conference on Decision and Control (CDC)

Austin, Texas, U.S.A

2020 **Third Place Graduate Student Poster Competition**, IEEE North Tech SAS

Denton, Texas, U.S.A

2019 **IEEE Outstanding Graduate Student**, IEEE local event

Denton, Texas, U.S.A

2019 **College of Engineering Dean Tuition Scholarship**, UNT

Denton, Texas, U.S.A

2019 **Toulouse Graduate School Scholarship**, UNT

Denton, Texas, U.S.A

2018 **College of Engineering Dean Tuition Scholarship**, UNT

Denton, Texas, U.S.A

2018 **Toulouse Graduate School Scholarship**, UNT

Denton, Texas, U.S.A

2012 **2nd prize**, National Physics Experiment Competition of Colleges

Beijing, China

Certifications

2016 **Machine Learning**, Instructor: Andrew Ng, license: NNBCAXYFA2HK.

Stanford University

on Coursera

Teaching Experiences

Spring '22 **EENG 5810 Digital Communications**, Teaching Assistant

Spring '22 **EENG 3920 Modern Communication System Design Project**, Teaching Assistant

Spring '22 **EENG 3510 Electronics I**, Teaching Assistant

Fall '21 **EENG 3510 Electronics I**, Teaching Assistant

Fall '21 **EENG 3520 Electronics II**, Teaching Assistant

Fall '21 **EENG 3920 Modern Communication System Design Project**, Teaching Assistant

Fall '20 **EENG 5940 Optimization Theory**, Teaching Assistant

Spring '19 **EENG 2620 Signals and Systems**, Teaching Assistant

Fall '18 **EENG 2620 Signals and Systems**, Teaching Assistant

Fall '18 **EENG 5940 Control and Optimization for Power Systems**, Teaching Assistant

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Professional Activities

Member	IEEE HKN, IEEE Studnet Member, IEEE Young Professionals
Journal Reviewer	IEEE Transactions on Automatic Control IEEE Transactions on Control of Network Systems IEEE Transactions on Industrial Electronics IEEE Transactions on Neural Networks and Learning Systems IET Control Theory and Applications Neurocomputing Automatica International Journal of Robust and Nonlinear Control
Conference Reviewer	Advances in Neural Information Processing Systems (NeurIPS) IEEE Conference on Decision and Control (CDC) American Control Conference (ACC) IEEE International Conference on Control and Automation (ICCA) Chinese Control Conference (CCC)
Conference Chair	Co-Chair (Substitute Dr. Tao Yang) of Distributed Optimization and Learning for Networked Systems II at CDC 2021

Mentoring

Kelvin Darden

M.S. STUDENT

- Project on load shedding in Smart Grid.
- First placement: engineer, Oncor Electric Delivery.

UNT

2018