



# 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 - present*

### 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

## Professional Experience

### University of North Texas.

RESEARCH/TEACHING ASSISTANT

- Cyber-Physical Energy System Laboratory, Department of Electrical Engineering.
- Supervisor: Dr. Colleen Bailey & Dr. Tao Yang.

*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*

## JOURNAL ARTICLES [8]


- A Primal-Dual SGD Algorithm for Distributed Nonconvex Optimization**  
 Xinlei Yi, Shengjun Zhang, Tao Yang, Tianyou Chai, Karl H Johansson  
*SIAM Journal on Optimization* (Under Review).  Under Review
- 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* (Under Review).  Under Review
- 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* (Under Review) . Under Review
- Zeroth-order Algorithms for Distributed Stochastic Nonconvex Optimization**  
 Xinlei Yi, Shengjun Zhang, Tao Yang, Karl H Johansson  
*IFAC Automatica* (Under Review).  Under Review
- Distributed Zeroth-order Stochastic Coordinate Methods**  
 Shengjun Zhang, Yunlong Dong, Dong Xie, Lisha Yao, Colleen P. Bailey, Shengli Fu  
*IEEE Transactions on Signal Processing* (In Submission) . In Submission
- Variance Aware Reward Smoothing for Deep Reinforcement Learning**  
 Yunlong Dong, Shengjun Zhang, Xing Liu, Yu Zhang, Tan Shen  
*Neurocomputing* (2021). Elsevier.  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. Science Press.  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. American Scientific Publishers.  2016

## CONFERENCE PROCEEDINGS [9]

- A Primal-Dual Algorithm for Distributed Sparse Principal Component Analysis**  
 Shengjun Zhang, Colleen P. Bailey  
*55th Annual Asilomar Conference on Signals, Systems, and Computers* Pacific Grove, CA, United States  
 Under Review
- 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)*  Austin, TX, United States  
 Under Review
- 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
- 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*  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)*  Jeju Island, Republic of Korea  
 2020
- Obstacle Avoidance and Navigation Utilizing Proximal Policy Optimization**  
 Daniel Zhang, Colleen P. Bailey  
*SPIE Artificial Intelligence and Machine Learning for Multi-Domain Operations Applications II*  California, United States  
 2020
- Optimal Control Under Communication Constraints for Multi-agent Unmanned Vehicles**  
 Daniel Zhang, Colleen P. Bailey

## 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) 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)Edinburgh, Scotland  
2019

## PREPRINT [2]

## Distributed Proportional-Integral Optimization Algorithms with Event-triggered Communication

Wen Du, Xinlei Yi, Shengjun Zhang, Jemin George, Tao Yang

2019

## Distributed Economic Dispatch over Networks with Markovian Communication Losses

Junfeng Wu, Shengjun Zhang, Tao Yang, Ling Shi, Hong Wang

2018

## Honors & Awards

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 **2<sup>nd</sup> prize**, Physics Experiment Competition of colleges

Beijing, China

## Certifications

2016 **Machine Learning**, Instructor: Andrew Ng, license: NNBCAXYFA2HK.Stanford University  
on Coursera

## Mentoring

**Kelvin Darden**

UNT

M.S. STUDENT

2018

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

## Teaching Experiences

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

UNT

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

UNT

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

UNT

## Professional Activities

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**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  
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)