



# Shengjun(Daniel) Zhang

RESEARCH ASSISTANT · 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

- Control Theory

*Beijing, China*

*Sep. 2010 - Jul. 2014*

## Research Interests

### Artificial Intelligence

Statistical Learning, Machine Learning, Reinforcement Learning

### Optimization

Convex Optimization, Non-convex Optimization, Distributed Optimization

### Power System

DERs with Transactive Approaches

## 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*

## Research & Projects

## Robust Optimization with Event Triggered Communication.

RESEARCH PROJECT

- Minimize a global cost function formed by a sum of local convex cost functions in a distributed way.
- Develop a robust algorithm over an undirected and connected network.
- The proposed algorithm is arbitrarily initialized unlike the existing algorithms.
- The proposed algorithm is arbitrarily initialized unlike the existing algorithms.
- This work has been submitted to the 58<sup>th</sup> IEEE Conference on Decision and Control.

UNT

Feb. 2019 - present

## Analyzing Distributed Optimization Algorithms via IQC.

RESEARCH PROJECT

- Investigate the convergence rate of distributed push-pull based optimization algorithms in directed graph networks.
- Present a unified framework based on integral quadratic constraints (IQCs) from robust control theory.
- Formulate convergence analysis problems into a semidefinite program (SDP).
- This work has been accepted by the 15<sup>th</sup> IEEE International Conference, and is in **Best Student Paper Shorten List**.

UNT

Sep. 2018 - present

## Nonlinear System Identification via Sparse Bayesian Learning.

COURSE PROJECT

- Reimplement *Sparse Bayesian Learning Algorithm*, proposed in *A Sparse Bayesian Approach to The Identification of Nonlinear State-space Systems*.
- Apply such an algorithm to identify a pendulum model.

UNT

Oct. 2018 - Dec. 2018

## Applying Q-Learning to a 4 × 4 Tic-Tac-Toe.

COURSE PROJECT

- Implement Q-learning algorithm to a 4 × 4 Tic-Tac-Toe game.

UNT

Mar. 2018 - May 2018

## UGV Integrated Mobile Platform.

RESEARCH PROJECT

- Model the UGV integrated mobile platform and simulated it via V-rep.
- Implement SLAM and control algorithms on the integrated mobile platform.

NYU

Jan. 2016 - Jul. 2016

## Honors & Awards

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|------|--|--------------------------------------|
| 2019 | <b>IEEE Outstanding Graduate Student</b> , IEEE local event              | <a href="#">Denton, Texas, U.S.A</a> |
| 2019 | <b>College of Engineering Dean Tuition Scholarship</b> , UNT             | <a href="#">Denton, Texas, U.S.A</a> |
| 2019 | <b>Toulouse Graduate School Scholarship</b> , UNT                        | <a href="#">Denton, Texas, U.S.A</a> |
| 2018 | <b>College of Engineering Dean Tuition Scholarship</b> , UNT             | <a href="#">Denton, Texas, U.S.A</a> |
| 2018 | <b>Toulouse Graduate School Scholarship</b> , UNT                        | <a href="#">Denton, Texas, U.S.A</a> |
| 2012 | <b>2<sup>nd</sup> prize</b> , Physics Experiment Competition of colleges | <a href="#">Beijing, China</a>       |

## Certifications

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

[Stanford University](#)  
[on Coursera](#)

## Supervision Experiences

### Kelvin Darden

M.S. STUDENT

- Project on load shedding in Smart Grid.
- First placement: engineer, Electric Reliability Council of Texas (ERCOT), Texas.

UNT

2018

## 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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<b>Member</b>	IEEE Studnet Member, IEEE Young Professionals
<b>Journal Reviewer</b>	IET Control Theory and Applications Neurocomputing Automatica
<b>Conference Reviewer</b>	IEEE Conference on Decision and Control (CDC) IEEE International Conference on Control and Automation (ICCA) Chinese Control Conference (CCC)

## Publications

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### JOURNAL ARTICLES [1]

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 [2]

Distributed Online Convex Optimization with Long Term Coupled Constraints

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)*

Edinburgh, Scotland  
2019

### PRESENTED (UNPUBLISHED) [3]

Distributed Proportional-Integral Optimization Algorithms with Event-triggered Communication

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

2019

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

Xinlei Yi, Shengjun Zhang, Tao Yang, Karl H Johansson, Tianyou Chai  
*arXiv preprint arXiv:1909.03282* (2019)

. 2019

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

Xinlei Yi, Shengjun Zhang, Tao Yang, Junfeng Wu, Karl H Johansson  
*arXiv preprint arXiv:1904.07022* (2019)

. 2019