



Shengjun(Daniel) Zhang

RESEARCH ASSISTANT · STATISTICAL LEARNING

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"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

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 58th 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 15th 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 | IEEE Outstanding Graduate Student , IEEE local event |
| 2019 | College of Engineering Dean Tuition Scholarship , UNT |
| 2019 | Toulouse Graduate School Scholarship , UNT |
| 2018 | College of Engineering Dean Tuition Scholarship , UNT |
| 2018 | Toulouse Graduate School Scholarship , UNT |
| 2012 | 2nd prize , Physics Experiment Competition of colleges |

Denton, Texas, U.S.A

Denton, Texas, U.S.A

Denton, Texas, U.S.A

Denton, Texas, U.S.A

Denton, Texas, U.S.A

Beijing, China

Certifications

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

Mentoring

Kelvin Darden

M.S. STUDENT

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

UNT

2018

Teaching Experiences

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| 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 Studnet Member, IEEE Young Professionals
Journal Reviewer	IET Control Theory and Applications Neurocomputing Automatica
Conference Reviewer	IEEE Conference on Decision and Control (CDC) American Control Conference (ACC) IEEE International Conference on Control and Automation (ICCA) Chinese Control Conference (CCC)

Publications

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 [3]

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

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)

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