

# SHENGJUN(DANIEL) ZHANG

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Cyber-Physical Energy System Laboratory (NTDP B241)  $\diamond$  University of North Texas, Denton, TX 76207

## EDUCATION

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### Doctor of Philosophy in Electrical Engineering (Minor in Business Management)

January 2018 - Current

Department of Electrical Engineering, College of Engineering  
University of North Texas, GPA: 4.0/4.0

**Supervisor: Prof. Tao Yang**

### Master of Science in Electrical Engineering

January 2015 - January 2017

Tandon School of Engineering  
New York University, GPA: 3.71/4.0

### Bachelor of Science in *Automation of Honors Program*

September 2010 - June 2014

College of Information and Electrical Engineering  
China Agricultural University, GPA: 3.53/4.0

## VISITING SCHOLAR

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### Visiting Scholar

June 2018 - July 2018

State Key Lab of Digital Manufacturing Equipment and Technology  
School of Automation, Huazhong University of Science and Technology

**Supervisor: Prof. Ye Yuan**

### Visiting Scholar

July 2018

Group of Networked Sensing and Control  
College of Control Science and Engineering, Zhejiang University

**Supervisor: Prof. Junfeng Wu**

## SKILLS AND INTERESTS

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### Interests

Control Theory, Non-linear Control, Robotics, Modeling and Simulation,  
Machine Learning, Deep Reinforcement Learning, Distributed Optimization,  
Connected Autonomous Vehicles.

### Design Software

MATLAB, Python, TensorFlow, PyTorch, Java, C++, Embedded C, Linux,  
Assembly Language, Robot Operating System, V-Rep,  $\text{\LaTeX}$ .

## PROJECTS

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### Applying Q-Learning to a $4 \times 4$ Tic-Tac-Toe

March 2018 - April 2018

*Major Project as a part of curriculum*

Reinforcement learning is essential for applications where there is no single correct way to solve a problem. In this project, I show that reinforcement learning is very effective at learning how to play the game Tic-Tac-Toe, despite the high-dimensional state. The agent is not given information about what the blocks or grids look like - it must learn these representations and directly use the reward and Q-values to develop an optimal strategy. The Q-agent uses basic Q-Learning algorithm, and shows that it is able to achieve super-human performance.

### $H_\infty$ Control

March 2016 - May 2016

*Major Project as a part of curriculum*

- $H_\infty$  control is a method that could reduce modeling errors and unknown disturbances in a system, while providing quantifiable optimization of large scale multi-variable problems. I implemented both of bisection algorithm and the algorithm based on Algebraic Riccati Equations to solve  $H_\infty$  control problems.

### UGV Integrated Mobile Platform

January 2016 - May 2016

*Control/Robotics Research Laboratory Project*

- Modeled the UGV integrated mobile platform and simulated it via V-rep.
- Implemented SLAM and control algorithms on the integrated mobile platform to make the UGV run and avoid obstacles automatically.

### Simulating Katana and a Wall Following Vehicle via V-rep

March 2015 - May 2015

*Major Project as a part of curriculum*

- Model Katana robot arms, which has 4 revolute joints in V-rep.
- Simulated using Katana robot arms picking up an object from a desk and put it down to a different spot smoothly.
- Simulated a simple vehicle with a distance sensor and a force sensor follows a wall automatically.

### Temperature Control System for Nucleic Acid Isolation and Purification Device

January 2014 - June 2014

*Graduation Project*

- Determined the adoption of sectionally closed-loop control model after analyzing heating power and heat dissipated power; enabled the system to maintain required temperatures; designed control circuit to collect and adjust temperature and communicated with the upper computer; completed the control software by C language.

### “Freescale” Intelligent Car

October 2012 - June 2013

*“Freescale” Intelligent Car Competition*

- Designed different modules according to features of each component and integrated these modules together; applied PID algorithm and Kalman Filter to control and adjust the PWM duty ratio to make the car upright and manipulate the speed of the two direct-current motors as a way to handle direction.

### License Plate Recognition Based on Matlab

October 2012 - December 2012

*Major Project as a part of curriculum*

- Dealt with the received images by grey processing and median filter, and proceeded edge extraction by Roberts operator; extracted the plate numbers and carried out binarizations and corrections, and then characterized segmentation and normalization processing; adopted templates matching OCR to recognize the numbers.

## RESEARCH PUBLICATION

Junfeng Wu, **Shengjun Zhang**, Tao Yang, Ling Shi, Hong Wang, “*Distributed Economic Dispatch over Networks with Markovian Communication Losses*”, the 37th Chinese Control Conference(CCC) **Accepted**. April 2018

## INTERNSHIP/TRAININGS

### Electrical Engineer Internship,

Tellon Trading, Inc. Maintaining network and optimizing cost estimates.

January 2017 - December 2017

### Electrical Engineer Internship,

Tianjin OuYa Instrument Co., Ltd.

July 2014 - December 2014

## AWARDS AND CERTIFICATIONS

- College of Engineering Dean Tuition Scholarship March 2018
- Toulouse Graduate School Scholarship March 2018

- Courera Course Certifications of **Machine Learning** (License: NNBCAXYFA2HK) July 2016
- The second prize in the Physics Experiment Competition of colleges in Beijing March 2012
- The third-class scholarship for excellent academic performance 2012
- The second-class scholarship for excellent academic performance 2011

## EXTRA-CURRICULAR

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- Participated in **Texas System Day** April 2018
- Member on **USAPL** January 2018
- Participated in **UNT Powerlifting Team** January 2018
- Volunteer for **Haidian District of Beijing Disabled Persons Federation** April 2012
- Volunteer for **Sun Village Orphan Asylum** March 2011

## DECLARATION

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I hereby declare that all the details furnished above are true to the best of my knowledge and belief.