# Shuo Yang

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## RESEARCH INTEREST

**Discrete-Events System, Formal Methods, Cyber-Physical Systems, and Motion Planning.**

## EDUCATION

**Shanghai Jiao Tong University** *Shanghai, China*
Department of Automation *2017 – 2021 (Expected)*

- Major GPA: 88.1/100
- Member of **Key Laboratory of System Control and Information Processing**
- Advisor: Prof. Xiang Yin (http://xiangyin.sjtu.edu.cn/)

**University of Illinois at Urbana-Champaign** *Urbana, Illinois, USA*
Summer School Student *July 2019*

## PUBLICATIONS

**Opacity of Networked Supervisory Control Systems over Insecure Communication Channels**
*under review, 2019*

**Shuo Yang**, Junyao Hou, Xiang Yin, Shaoyuan Li.

- Propose a new framework for investigating the **security issue** in networked supervisory control systems over **multiple channel networks**
- Construct **network observer** to verify current-state opacity
- Generalize network observer to the **two-way network observer** to verify infinite-step and K-step opacity

## RESEARCH EXPERIENCES

**Shanghai Jiao Tong University, Key Laboratory of System Control and Information Processing**
*Shanghai, China*
Undergraduate Research Assistant with Prof. Xiang Yin *May 2019 - Present*

- My research topic focuses on the **security issue in supervisory control systems**
- Security issue over **insecure multiple channel networks**
- Supervisory synthesis for security in supervisory control systems (in progress)
- Security issue of active adversary in supervisory control systems (in progress)
- Trajectory planning under infinite-step opacity constraint (in progress)

**Shanghai Jiao Tong University, CyberC3 Intelligent Vehicle Labs** *Shanghai, China*
Undergraduate Research Assistant with Prof. Ming Yang *Feb. 2019 - May 2019*

- Design algorithms to control the intelligent vehicle in the virtual environment **CyberTORCS**
- Three parts: tracking the center line, following the head car, and parking our car
- Utilize **PID control** and some **physical models**
- Our team won the **first prizes** of tracking center line and following head car (total 36 teams)

**Shanghai Jiao Tong University** *Shanghai, China*
Coursework Project with Prof. Yue Gao *Nov. 2019 - Dec. 2019*
training video: https://www.youtube.com/watch?v=kB94Caq8gj4&feature=youtu.be

- Sample efficient optimization for biped locomotion
- Train robot NAO to learn to walk in simulation platform V-REP and transform the optimal policy to real robot
- Implement random search, genetical algorithms and **bayesian optimization** to reduce samples in the training process, respectively

**Shanghai Jiao Tong University** *Shanghai, China*
Coursework Project with Prof. Enmei Tu *Dec. 2019*

- Predicting NBA games (both regular seasons and playoffs) by using machine learning methods
- Do feature selection and give the **upper bound analysis** of accuracy rate
- Propose our combined model: accuracy rates for regular seasons and playoffs are 67.6% and 63.4%

## AWARDS AND HONORS

- 3rd Prize of the 32nd National High School Mathematics Competition *2016*
- Three good students of Shanghai Jiao Tong University (top10%) *2018*
- B Class Excellent Scholarship of Shanghai Jiao Tong University (top10%) *2018*
- 3rd prize of the 35th National College Student Physics Competition *2018*
- C Class Excellent Scholarship of Shanghai Jiao Tong University (top20%) *2019*
- Winner Team of Intelligent Vehicle Races of Shanghai Jiao Tong University (top3%) *2019*

## TEACHING EXPERINCES

- Final exam review lecturer of **Linear Algebra**, Shanghai Jiao Tong University *Shanghai, China*
  Instructor: Prof. Qifen Jiang *Fall 2017*
- **Mathematics Competition** Lecturer, High School Affiliated to Shanghai Jiao Tong University
  *Shanghai, China*
  *Summer 2018*

## ACTIVITY EXPERIENCES

- Volunteer of the 23rd Shanghai International Marathon *2018*
- Volunteer of the 122nd Anniversary Celebration of Shanghai Jiao Tong University *2018*
- Volunteer of the 24th Shanghai International Marathon *2019*
- Volunteer of the 123rd Anniversary Celebration of Shanghai Jiao Tong University *2019*

## LANGUAGE, SKILLS AND INTRERESTS

**Language**: Mandarin (native), English (fluent) **Embedded Systems**: Arduino, STM32
**Programming**: Python, C++, MATLAB, Verilog, HTML **Deep Learning**: Keras, PyTorch
**Simulation**: SIMULINK, Multisim **Robotic Platform**: V-REP
**Interests**: Basketball, Literature, Music, Martial Arts, and Movies.