

# Youbang SUN

(+1) 979 402 8350 ◊ sun.youb@northeastern.edu

Northeastern University

360 Huntington Avenue, Boston, MA 02115

## EDUCATION

---

### Northeastern University

Ph.D. candidate in Department of Mechanical and Industrial Engineering  
Advisor: Prof. Shahin Shahrampour

*Sept. 2021 - Now*

Overall GPA: 4.0/4.0

### Texas A&M University

Ph.D. candidate (transferred) in Dept. of Industrial & Systems Engineering  
Advisor: Prof. Shahin Shahrampour

*Sept. 2019 - Aug. 2021*

Overall GPA: 4.0/4.0

### University of Science and Technology of China - Honors College

Bachelor of Engineering, *The Talent Program in Computer and Information Science and Technology*  
Major in Electronic Information Engineering  
Minor in Computer Science

*August 2015 - July 2019*

Overall GPA: 3.67/4.30 or 87.15/100

## RESEARCH INTERESTS

---

Machine Learning, Distributed Optimization, Manifold Optimization, Reinforcement Learning, Federated Learning, Control and Dynamical Systems

## PUBLICATIONS AND PREPRINTS

---

8. **Linear Convergence of Independent Natural Policy Gradient in Games with Entropy Regularization**  
Youbang Sun, Tao Liu, P. R. Kumar and Shahin Shahrampour  
IEEE Control Systems Letters and Conference on Decision and Control (L-CSS & CDC), Aug. 2024
7. **Improve Federated Learning Stability for Vehicle Trajectory Prediction**  
Youbang Sun, Jianlin Guo, Kieran Parsons, Stefano Di Cairano, Marcel Menner, Karl Bentorp, Yukimasa Nagai  
The 15th International Conference on Ubiquitous and Future Networks (ICUFN 2024), Jul. 2024
6. **Improving LoRA in Privacy-preserving Federated Learning**  
Youbang Sun, Zitao Li, Yaliang Li, Bolin Ding  
12th International Conference on Learning Representations (ICLR), May 2024, (Acc. rate 30.52%)
5. **Provably Fast Convergence of Independent Natural Policy Gradient for Markov Potential Games**  
Youbang Sun, Tao Liu, Ruida Zhou, P.R. Kumar, Shahin Shahrampour  
37th Conf. on Neural Information Processing Systems (NeurIPS), Dec. 2023, (Acc. rate 26.07%)
4. **On the Stability Analysis of Open Federated Learning Systems**  
Youbang Sun, Heshan Fernando, Tianyi Chen, Shahin Shahrampour  
The 2023 American Control Conference (ACC), Dec. 2022
3. **On Centralized and Distributed Mirror Descent: Exponential Convergence Analysis Using Quadratic Constraints**  
Youbang Sun, Mahyar Fazlyab, Shahin Shahrampour  
IEEE Transactions on Automatic Control (TAC), Nov. 2022

2. **Linear Convergence of Distributed Mirror Descent with Integral Feedback for Strongly Convex Problems**  
**Youbang Sun**, Shahin Shahrampour  
 IEEE conference on Decision and Control (CDC), Aug. 2021
1. **Distributed Mirror Descent with Integral Feedback: Asymptotic Convergence Analysis of Continuous-time Dynamics**  
**Youbang Sun**, Shahin Shahrampour  
 IEEE Control Systems Letters (L-CSS), Oct. 2020

## SUBMITTED PAPERS AND PREPRINTS

---

3. **Global Convergence of Decentralized Retraction-Free Optimization on the Stiefel Manifold**  
**Youbang Sun**, Shixiang Chen, Alfredo Garcia and Shahin Shahrampour  
 Arxiv preprint available (2405.11590)
2. **Retraction-free Distributed Gradient Tracking with Local Linear Convergence on the Orthogonal Manifold**  
**Youbang Sun**, Shixiang Chen, Alfredo Garcia and Shahin Shahrampour  
 38th Annual Conference on Neural Information Processing Systems (NeurIPS), Dec. 2024
1. **Can I trust you more? Model-agnostic hierarchical explanations**  
 Michael Tsang, **Youbang Sun**, Dongxu Ren, Yan Liu  
 Arxiv preprint available (1812.04801)

## INTERNSHIPS

---

- |   |                                      |
|---|--------------------------------------|
| <p><b>Alibaba DAMO Academy (Seattle)</b><br/>         Federated Learning and Applications of Large Language Model Fine-Tuning<br/>         Host: Dr. Yaliang Li</p>                 | <p><i>May. 2023 - Sept. 2023</i></p> |
| <p><b>Mitsubishi Electric Research Laboratories (MERL)</b><br/>         Distributed Learning and Computing over Networks with Vehicular Data<br/>         Host: Dr. Jianlin Guo</p> | <p><i>May. 2022 - Aug. 2022</i></p>  |

## HONORS AND AWARDS

---

- 2023 John and Katharine Cipolla PhD Merit Award  
 (Mechanical & Industrial Engineering at Northeastern University)
- 2023 ACC Student Travel Grant Award
- Graduate Scholarship for Outstanding Academic Achievements  
 (Texas A&M University, Industrial and Systems Eng. Department)
- Gold Prize for Undergraduates(Top 5%-10%)  
 (University of Science and Technology of China)
- Guanghua Scholarship for Undergraduates  
 (University of Science and Technology of China)

### Competition Awards

- Silver Prize of national level      *National Undergraduate Electronic Design Contest (NUEDC), 2017*
- Gold Prize of provincial level      *NUEDC, 2017*
- Silver Prize of national level      *Chinese Physics Olympiad (CPHO), 2014*