

Youbang SUN

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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

Master of Science in Department of Industrial & Systems Engineering

Sept. 2019 - Aug. 2021

Overall GPA: 4.0/4.0

Thesis: A Control-theoretical Analysis of Continuous-time Distributed Mirror Descent Algorithm

Advisor: Prof. Shahin Shahrampour

University of Science and Technology of China - Honors College

The Talent Program in Computer and Information Science and Technology

August 2015 - July 2019

Major in Electronic Information Engineering

Overall GPA: 3.67/4.30 or 87.15/100

Minor in Computer Science

RESEARCH INTERESTS

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

PUBLICATIONS AND PREPRINTS

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
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 Conference on Neural Information Processing Systems (NeurIPS), Dec. 2023
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. **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
1. **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

SUBMITTED PAPERS AND PREPRINTS

4. **Retraction-free Distributed Riemannian Gradient Descent with Linear Convergence Over the Stiefel Manifold**
Youbang Sun, Shixiang Chen, Alfredo Garcia and Shahin Shahrampour
41st International Conference on Machine Learning (ICML), Jul. 2024
3. **Linear Convergence of Independent Natural Policy Gradient in Games with Entropy Regularization**
Youbang Sun, Tao Liu, P. R. Kumar and Shahin Shahrampour
IEEE conference on Decision and Control (CDC), Aug. 2024
2. **Improve Federated Learning Stability for Vehicle Trajectory Prediction**
Youbang Sun, Jianlin Guo, Kieran Parsons, Stefano Di Cairano, Marcel Menner, Karl Bentorp, Yukimasa Nagai
The 35th IEEE Intelligent Vehicles Symposium (IV 2023), Submitted, Jan. 2023
1. **Can I trust you more? Model-agnostic hierarchical explanations**
Michael Tsang, Youbang Sun, Dongxu Ren, Yan Liu
Arxiv preprint available (1812.04801)

INTERNSHIPS

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

HONORS AND AWARDS

- Northeastern University Cipolla Award
- 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 provincial level *Chinese Physics Olympiad, 2014*