Yubin Wang

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Education

King Abdullah University of Science and Technology **Jul. 2021 – Present**
Visiting Student in Electrical and Computer Engineering *Thuwal, Saudi Arabia*

Northeastern University **Sep. 2018 – Present**
Bachelor of Engineering in Automation *Qinhuangdao, China*

Research Interests

- Multi-Agent Systems
- Reinforcement Learning
- Control Theory
- State Estimation

Experience

National University of Singapore **Mar. 2021 – Present**
Research Intern *Singapore*

- Worked with Prof. Guillaume Sartoretti at Multi-Agent Robotic MoTion(MARMoT) Lab on projects related to Multi-Robot Reinforcement Learning.
- Conducted the project of Multi-Evader Pursuit Game via Multi-Agent Reinforcement Learning.
- Devoted to enhance collaboration of robots via direct and instant communication.

Northeastern University **Mar. 2021 – Jun. 2021**
Teaching Assistant *Qinhuangdao, China*

- Worked with Prof. Fei Chen as Teaching Assistant of advanced course "Nonlinear Systems".
- Provided assistance in students' final project and solving student's problems after class
- Assisted professor in teaching materials propagation and student's assignments review

Northeastern University **Oct. 2018 – Feb. 2021**
Research Assistant *Qinhuangdao, China*

- A member of Aerial Robots Group at Autonomous Networks and Control Lab(ANCL) advised by Prof. Fei Chen
- Participated in Phd. candidate's projects broadly related to multi-robot systems and robotic control.
- Conduct a project of multi-UAV formation flight successfully in cooperation with undergraduates.

Projects

Deep Learning-Based Observer Design for Discrete-Time Nonlinear Systems | *KAUST* **Jul. 2021**

- Proposed a learning-based observer of nonlinear systems to estimate inner states with outputs.
- Conducted our implementation with Pytorch framework by Python language.
- Combined with traditional LMI-based observer to improve the prediction and estimation capability with fitting hyperparameters via Deep Learning.

Multi-Evader Pursuit Game via Multi-Agent Reinforcement Learning | *NUS* **Mar. 2021**

- Built multi-agent evader-pusuit game simulation testbed based on OpenAI mpe.
- Utilized attention-based Actor-Critic Algorithm to train evaders to escape and pursuers to capture evaders.
- Achieved pursuit "cage" to ensure evader that cannot escape.
- Exploited communication learning to contribute to this kind of fully collaborative mission.

Multi-Robot Exploration and Source Hunting | *NEU* **Sep. 2020**

- Proposed a scalar-based multi-agent source hunting algorithm and verified convergence and robustness via MATLAB.
- Developed robotic hardware and software platform in simulation and physical environment on testbed of Turtlebot3.

- Achieved access to precise distance measurement of sound and ultra wide band source based on TOA and TDOA.
- Implemented collision avoidance scheme based on navigation vector field and artificial potential field.

Multi-Quadrotor Formation Flight | *NEU* **Oct. 2018**

- Built robotic communication via radio link and achieved global state measurement assistance from motion capture systems "OptiTrack".
- Set up robotic hardware and software platform on testbed of Crazyflie2.0.
- Controlled multiple UAVs to achieve points to points transition and formation flight successfully.

Honors and Awards

- Comprehensive School Scholarships, Northeastern University 2019, 2020, 2021
- Honorable Mention, Mathematical Contest In Modeling and Interdisciplinary Contest In Modeling Feb. 2021
- Distinguish Fund for Cultivating College Students' Scientific and Technological Innovation Ability, Hebei Provincial Department of science and technology Mar. 2021

Technical Skills

Languages: Python, C/C++, MATLAB, Julia, Latex
Developer Tools: ArcGIS, Alibaba Cloud Platform
Technologies/Frameworks: Linux, Pytorch, PaddlePaddle, GitHub, ROS/ROS2, Gazebo, SolidWorks

Extracurricular

- Sudo Artificial Intelligence Team Leader, RoboMaster University AI Challenge(RMUA) Sep. 2020 – Feb. 2021
- Deputy Minister of Public Relations Department, School of Control Engineering Jun. 2019 – May. 2020
- Captain of Men's Basketball Team, Deparment of Automation Sep. 2019 – Oct. 2020
- Most Valuable Player, Freshman Cup Men's Basketball League, School of Control Engineering Sep. 2019, Sep. 2020