Yubin Wang

Electrical and Computer Engineering, KAUST, Saudi Arabia
fishcakewang11@gmail.com yubin.wang@kaust.edu.sa https://yubinwang11.github.io

Education

King Abdullah University of Science and Technology **Jul. 2021 – Present**
Visiting Student in Electrical and Computer Engineering, advised by Meriem T. Laleg *Saudi Arabia*

Northeastern University **Sep. 2018 – Present**
Bachelor of Engineering in Automation, GPA: 89.3/100 *China*

Publications

- **Yubin Wang**, Yasmine Marani and Taous Meriem Laleg Kirati. "A Deep-Learning-Based Luenberger Observer for Direct Contact Membrane Distillation System Modeled by Differential Algebraic Equations." *2022 IEEE Conference on Control Technology and Applications (**CCTA**).* **Submitted**.

Experience

Estimation, Modeling and Analysis Group, KAUST **Saudi Arabia**
Visiting Student, advised by Meriem T. Laleg *Jul. 2021 – Present*

- one first-author paper submitted to ***CCTA2022*** (top conference in control focused on application).

Multi-Agent Robotic Motion Lab, National University of Singapore **Singapore**
Research Intern, advised by Guillaume Sartoretti *Mar. 2021 – Present*

- Developed a decentralized multi-agent reinforcement learning benchmark-testing platform based on OpenAI multiple particles environment.
- Implemented reinforcement learning methods to solve multi-evader-multi-pursuer game problems and the experimental result on my personal web
- Created a swarm-intelligence based policy to optimize the global collaboration in multi-agent informative path planning.
- 1 co-authored paper pending, thousands of line open-source code on Github

the Department of Automation, Northeastern University **China**
Teaching Assistant *Mar. 2021 – Jun. 2021*

- Teaching Assistant of advanced undergraduate course, *Nonlinear Systems.*

Autonomous Networks and Control Lab, Northeastern University **China**
Research Assistant, advised by Fei Chen *Oct. 2018 – Feb. 2021*

- the project, *distributed multi-robot exploration and source localization* was supported by Hebei Provincial Department of Sci&Tech with funding.
- Conducted the projects, *multi-robot source hunting, multi-UAV formation Control* and sub-project *multi-robot point-to-point transition with collision avoidance*

Selected Projects

Learning-Based Observer for Differential-Algebraic System | *KAUST* **Jul. 2021**

- Proposed a learning-based observer to estimate future states with the knowledge of initial state and a sequence of output and obtained ideal estimation results after applying the above observer to Direct Contact Membrane Distillation (DCMD) systems.

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

- Formed dynamic cage with pursuers to ensure learning -trained evader cannot escape utilizing attention-based Multi-Agent-Actor-Critic algorithm with agents broadcasting communications on testbed I previously developed.

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

- Proposed a scalar-based distributed multi-agent source hunting algorithm, verified convergence and robustness via simulation and then accessed elegant exploration formation and precise estimation after transplanting algorithm to multi-robot-exploration testbed with ultra-wide-band source sensor.
- Built experimental platform including Turtlebot3 UGV, Optitrack external global localization systems, which supports my sub-project *multi-robot point-to-point transition with collision avoidance* with implementing artificial potential field, navigation vector field, decentralized online model predictive control algorithm to avoid collision and ensure safe transitions.

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

- Controlled multi-UAV to complete formation transitions on Crazyflie2.0 testbed with radio link communication and point-cloud mocap.

Technical Skills

Languages: Python, C/C++, MATLAB, Julia, Bash, Latex
Machine Learning: Torch, TensorFlow, wandb
Others: Conda, Linux, ROS/ROS2, Gazebo, HTML/CSS, Git, SolidWorks, Optitrack

Honors, Awards and Service

- KAUST Visting Student Fellowship
- Reviewer for *CCC2020* and *PLOSONE*
- School Scholarships (Year 1, Year 2 and Year 3)
- Honorable Mention, MCM/ICM - Feb. 2021
- Distinguish Project Funding, Provincial Department of Sci&Tech - Mar. 2021