

# Xiaowei Xing

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🌐 <https://github.com/Everglow0214>

## Education

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### **Korea Advanced Institute of Science and Technology**

*Ph.D. Candidate in Electrical Engineering*

Advisor: Prof. Dong Eui Chang, GPA: 3.85/4.3, 95.0/100

**Daejeon, Korea**

*Aug. 2020 – Present*

### **Korea Advanced Institute of Science and Technology**

*M.Sc. in Electrical Engineering*

Advisor: Prof. Dong Eui Chang, GPA: 3.82/4.3, 94.66/100

**Daejeon, Korea**

*Aug. 2018 – June 2020*

### **Harbin Institute of Technology**

*B.Sc. in Automation (Honors School, Elite Program)*

Advisor: Prof. Yu Yao and Prof. Fenghua He, GPA: 85.65/100

**Harbin, China**

*Sept. 2014 – June 2018*

## Research Experience

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### **Control Lab, Korea Advanced Institute of Science and Technology**

*Graduate Research Assistant*

**Daejeon, Korea**

*Aug. 2018 – Present*

- Reinforcement Learning based Surveillance and Reconnaissance Techniques Development, Oct. 2020 – Dec. 2022.
  - Developed a drone simulator based on PyBullet.
  - Developed reinforcement learning based single-drone and multi-drone autonomous exploration methods in unknown environments.
  - Developed multi-drone mission assignment and path planning methods.
- MATLAB Toolbox Development, Mar. 2020 – Aug. 2020.
  - Researched on optimal control and adaptive dynamic programming.
  - Developed the Adaptive Dynamic Programming Toolbox (project link), and applied the software package to multiple linear and nonlinear systems.
- Thermal Management System Development, funded by Hanon Systems, Nov. 2019 – Feb. 2020.
  - Developed recurrent neural networks based methods for thermal management system identification.
- Object Suction by uArm Manipulator based on Deep Reinforcement Learning, Nov. 2018 – Jul. 2019.
  - Proposed an adaptive replay buffer update approach.
  - Integrated the whole system, including deep reinforcement learning, ROS simulation, camera calibration, object localization and real-world uArm manipulator control.

### **Control & Simulation Center, Harbin Institute of Technology**

*Undergraduate Research Assistant*

**Harbin, China**

*Jan. 2016 – Jun. 2018*

- International Aerial Robotics Competition (Asia-Pacific Venue), First Prize, Oct. 2017 – Jun. 2018.
  - Developed a simulation competition field based on Gazebo, and realized communication among objects, obstacles and the drone, including collisions and interactions.
  - Designed offline and online search strategies based on statistical characteristics of object locations and predictions of object trajectories.
  - Designed interaction strategies based on kinematic characteristics of objects.
- International Aerial Robotics Competition (Asia-Pacific Venue), First Prize, Oct. 2016 – Aug. 2017.
  - Designed object detection methods combining classical image processing techniques and deep neural networks for platforms with limited computing power.
- DJI Developer Challenge, Global Top 15, Jan. 2016 – Jul. 2016.
  - Achieved detection of AprilTags, and promoted efficiency of detection by predicting object position based on difference between adjacent frames.

## Publications

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The corresponding author is indicated by \*.

- [1] M. Gao, **X. Xing**, and D. E. Chang\*, "Autonomous drone surveillance in a known environment using reinforcement learning," in *International Conference on Control, Automation and Systems (ICCAS)*, 2022.

- [2] J. Jia, **X. Xing**, and D. E. Chang\*, "GRU-attention based TD3 network for mobile robot navigation," in *International Conference on Control, Automation and Systems (ICCAS)*, 2022.
- [3] **X. Xing** and D. E. Chang\*, "The adaptive dynamic programming toolbox," *Sensors*, vol. 21, no. 16, p. 5609, 2021.
- [4] **X. Xing** and D. E. Chang\*, "Deep reinforcement learning based robot arm manipulation with efficient training data through simulation," in *International Conference on Control, Automation and Systems (ICCAS)*, 2019.
- [5] Z. Xu, F. He\*, **X. Xing**, H. Qi, and X. Huo, "Modelling and control of a quadrotor equipped with an unbalanced load," in *Asian Control Conference*, 2017.
- [6] H. Yao, Q. Yu, **X. Xing**, F. He\*, and J. Ma, "Deep-learning-based moving target detection for unmanned air vehicles," in *Chinese Control Conference*, 2017.

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## Selected Honors & Awards

- Best Paper Award, Korea Artificial Intelligence Association & Microsoft Research Joint Conference, 2020.
- Second-class Innovation and Entrepreneurship Scholarship, Ministry of Industry and Information Technology of China, 2017.
- People's Scholarship, Second-Class (three times), Third-Class (once), Harbin Institute of Technology, 2014 – 2018.

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## Service

- Teaching Assistant, SEP592 Special Topics in Software ‹Theory and Practice for Deep Learning›, KAIST, Fall 2020.
- Translator and maintainer, Translation of CS234 Reinforcement Learning (Stanford), ApacheCN Machine Learning Community (project link), Jul. 2019 – present.

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## Skills

- Programming: Python, MATLAB, C++ (basic).
- Tools: Robot Operating System (ROS), PyTorch, TensorFlow, Git.