



Lingwei Zhu

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🌐 [Personal Page](#)

🔗 [Google Scholar](#)

Born 25 Aug 1995

Personal Statement

Currently I am a PhD candidate at Robot Learning Lab, Nara Institute of Science and Technology (NAIST), Japan. I received the master degree from Intelligent System Control Lab, NAIST, and the bachelor degree from Tianjin Polytechnic University, China.

My research interest lies in developing both theoretically sound and practical reinforcement learning algorithms for realizing autonomous control of large-scale systems such as factory or robots.

Scholarship/Award

Apr. 2021 – present

Japan Society for Promotion and Science - DC2

[JSPS DC2](#) is a scholarship for cultivating excellent young researchers in Japan.

Aside from monthly stipend, selected researchers (doctor candidates) receive also independent research funding from [KAKENHI](#).

In 2020 the acceptance rate for DC2 was 19.8%. I was the only foreigner JSPS DC from NAIST for the past 5 years.

Apr. 2019 – Mar. 2020

Japanese Government Scholarship (MEXT)

[MEXT](#) is the Japanese Government Scholarship granted by Ministry of Education, Culture, Sports, Science and Technology of Japan.

I was recommended by university based on scientific performance.

Mar. 2021

IEEE Kansai Section Student Paper Award

The student paper award was conferred by IEEE Kansai Chapter to recognize the contribution on safe reinforcement learning in this [ICRA conference paper](#).

EDUCATION

*Oct. 2019 - Sep. 2022
(expected)*

Doctor of Engineering - NAIST

I researched reinforcement learning (RL) algorithms and their applications on large-scale systems under the supervision of [Takamitsu Matsubara](#), with a specific focus on industrial processes and robots.

During this period my main research theme was safe RL including using actor-advisor framework and monotonic policy improvement within entropy-regularized MDPs to realize safety in RL.

Oct. 2017 - Sep. 2019

Master of Engineering - NAIST

During my master I proposed the first RL algorithm for plant-wide control of a large-scale chemical process in simulation. This result was the first successful attempt on using RL for plant-wide control of large-scale industrial process.

I was under the supervision of Takamitsu Matsubara and [Sugimoto Kenji](#).

Publications/Patents

Journal

- [LINGWEI ZHU](#), Y. CUI, G. TAKAMI, H. KANOKOGI, T. MATSUBARA
Scalable Reinforcement Learning for Plant-wide Control of Vinyl Acetate Monomer Process, *Control Engineering Practice* (IF: 3.475), Vol. 97, April 2020, [link](#),
- [LINGWEI ZHU](#), T. KITAMURA, T. MATSUBARA
Exploiting KL Regularization in Monotonic Policy Improvement for Reinforcement Learning, *Neural Networks* (IF: 8.05), **revised manuscript submitted**
- [LINGWEI ZHU](#), G. TAKAMI, M. KAWAHARA, H. KANOKOGI, T. MATSUBARA
Alleviating Parameter-tuning Burden in Reinforcement Learning for Large-scale Process Control, *Computers and Chemical Engineering* (IF: 3.845), **revised manuscript submitted**

Conference

- [LINGWEI ZHU](#), T. KITAMURA, T. MATSUBARA
Cautious Actor-Critic, Asian Conference on Machine Learning (ACML), 2021, **accepted**, (acceptance rate 30.4%) [link](#)
- T. KITAMURA, [LINGWEI ZHU](#), T. MATSUBARA
Geometric Value Iteration: Dynamic Error-Aware KL Regularization for Reinforcement Learning, ACML, 2021, **accepted**, (acceptance rate 30.4%) [link](#)
- [LINGWEI ZHU](#), Y. CUI, T. MATSUBARA
Dynamic Actor-Advisor Programming for Scalable Safe Reinforcement Learning, ICRA, 2020, [link](#)
- Y. CUI*, [LINGWEI ZHU](#)*, T. MATSUBARA
Factorial Kernel Dynamic Policy Programming for Vinyl Acetate Monomer Plant Model Control, CASE, 2018, [link](#)

Patents

- United States patent (inventor of apparatus, method, program and recording medium, same as below; Patent Number US20200057416A1). Takamitsu Matsubara, Yunduan Cui, [Lingwei Zhu](#), et al.
- European patent (EP3620868A1). Takamitsu Matsubara, Yunduan Cui, [Lingwei Zhu](#), et al.
- Chinese patent (CN110837893A). Takamitsu Matsubara, Yunduan Cui, [Lingwei Zhu](#), et al.
- Japanese patent (JP2020027556A) Takamitsu Matsubara, Yunduan Cui, [Lingwei Zhu](#), et al.

Skills

Languages English, Japanese, Chinese (native)

Programming Programmining: Matlab, Python, Tensorflow, PyTorch

Work Experience / Professional Activities

Work Experience JSPS-KAKENHI funded researcher

Apr.2021 - present

Annual research grants of around \$10K were provided by JSPS KAKENHI for two years for pursuing high quality research in application of RL to safety-critical control problems such as real-time process control (e.g. chemical process) or robotics (e.g. safety-critical assembly robots or human-robot interaction).



Jan. 2022 - Intern student, Advanced Telecommunication Research (ATR)

Starting from Jan. 2022 I will be an intern student in the world-renowned research institute Advanced Telecommunication Research Institute International (ATR), supervised by Dr. [Eiji Uchibe](#).



Apr.2018 - present Research Technician, NAIST-Yokogawa cooperated research

Cooperated with Yokogawa Electric Corporation in developing RL agents for plant-wide control of large-scale vinyl acetate monomer (VAM) manufacturing process. This result was featured by multiple press releases and magazines such as (in Japanese) [Nikkei Robotics](#) or [Nikkan](#).



Apr. 2018 - Sep. 2019 Teaching Assistant, Intelligent System Control Lab, NAIST

Reviewer IEEE Robotics and Automation Letter (RAL)
IEEE International Conference on Robotics and Automation (ICRA)