Yuto Watanabe

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Personal Profile

I am a Ph.D. student at the ECE department, University of California San Diego, USA. I received the Bachelor's degree in Mechanical engineering and Master's degree in Informatics both from Kyoto University, Kyoto, Japan, in 2022 and in 2024, respectively. I was fortunate to be advised by Prof. Kazunori Sakurama and Prof. Toshiyuki Ohtsuka. From April 2024 to August 2024, I was a research fellow at Kyoto University funded by the JSPS Research Fellowship for Young Scientist DC1. My research interests include control theory, optimization, and their applications to network systems (e.g., distributed algorithms). I was awarded the 2024 Funai Overseas Scholarship.

Education

Sept. 2024 – present **University of California San Diego** *CA, USA*
Ph.D. student at the ECE department (GPA: 4.0/4.0)
Advisor: Prof. Yang Zheng

Apr. 2024 – Aug. 2024 **Kyoto University** *Kyoto, Japan*
Funded by the JSPS Research Fellowship for Young Scientists (DC1)

Apr. 2022 – Mar. 2024 **Kyoto University** *Kyoto, Japan*
Master of Informatics (GPA: 3.9/4.0)
Thesis: *Distributed optimization of clique-wise coupled problems via three-operator splitting*

Apr. 2018 – Mar. 2022 **Kyoto University** *Kyoto, Japan*
B.E. in Mechanical Engineering (GPA: 3.6/4.0)
Thesis: *Distributed dynamic matching of two groups of agents with different sensing ranges*

Experiences

Oct. 2022 – Aug. 2024 **Student Member** of Advanced Mathematical Science for Mobility Society.
The joint project of Kyoto University and Toyota Motor Corporation.

Apr. 2022 – Jul. 2022 **Teaching Assistant** at Kyoto University, Kyoto Japan.
Teaching assistant of the Practice of Basic Informatics Class.

Mar. 2022 – Nov. 2022 **Office Assistant** at Kyoto University, Kyoto Japan.
Translation of a monograph on multi-agent control into Japanese.

Research Publications

Journal Articles

[1] S. Fushimi, **Y. Watanabe**, and K. Sakurama, "Distributed controller design for discrete-time systems via the integration of extended LMI and clique-wise decomposition," *IEEE Control Systems Letters*, 2025, (accepted).

[2] **Y. Watanabe**, K. Sakurama, and H.-S. Ahn, "Gradient-based distributed controller design over directed networks," *IEEE Transactions on Control of Network Systems*, 2024, (to appear).

Peer Reviewed International Conference Proceedings

[1] **Y. Watanabe** and K. Sakurama, "Accelerated distributed projected gradient descent for convex optimization with clique-wise coupled constraints," in *the 22nd IFAC World Congress*, Yokohama, Japan, 2023.

[2] **Y. Watanabe** and K. Sakurama, "Distributed optimization of clique-wise coupled problems," in *the 62nd IEEE Conference on Decision and Control (CDC)*, Singapore, 2023, pp. 296–302.

[3] **Y. Watanabe** and K. Sakurama, "Distributed dynamic matching of two groups of agents with different sensing ranges," in *the 61st IEEE Conference on Decision and Control (CDC)*, Cancun, Mexico, 2022, pp. 5916–5921.

Papers Under Review

[1] **Y. Watanabe**, S. Fushimi, and K. Sakurama, "Characterization and convexification of LMI-based distributed controller design with a class of non-block-diagonal Lyapunov functions," submitted to *IEEE Transactions on Automatic Control* (under review).

[2] **Y. Watanabe** and K. Sakurama, "Distributed optimization of clique-wise coupled problems via three-operator splitting," submitted to *IEEE Transactions on Automatic Control* (under review).

Papers in Preparation

[1] **Y. Watanabe**, C.-F. Pai, and Y. Zheng, *Strong duality, hidden convexity, and gradient dominance in the linear quadratic regulator*, in preparation.

Awards

2024 **SCI Outstanding Student Presentation Award**, SCI'24, Osaka, Japan.

SICE Outstanding Student Award, the Society of Instrument and Control Engineers (SICE). This award is given to the first-rank student recommended by each institution or department every year.

UC San Diego, ECE department fellowship.

2023 **Funai Overseas Scholarship**.
This scholarship will cover two years of graduate school tuition plus a stipend of 3,000USD a month for living expenses. (Only for the UK, it will cover three years.)

JSPS Research Fellowship for Young Scientist (Tokubetsu Kenkyuin) DC1.
A governmental three-year fellowship for Ph.D. students at Japanese institutions. The acceptance rate is around 14.3%.

IEEE CSS Student Travel & Workshop Support Programs of CDC 2023.

SCI Outstanding Student Presentation Award, SCI'23, Kyoto, Japan.

Awards (continued)

The 2023 ISCIE Young Investigators Award, The Institute of Systems, Control and Information Engineers, Japan.
This award is given to around five outstanding young researchers in the Japanese control community.

Review experiences

Journals	IEEE Transactions on Automatic Control, IEEE Transactions on Control of Network Systems, IEEE Control Systems Letters.
Conferences	IEEE CDC, IEEE ACC.

Coursework at UCSD

ECE 285:	Game theory and multiagent systems (lecturer: Prof. B. Touri)	A

Skills

Languages	English: IELTS (Academic) overall score: 7.5 (Jan 2024).
	Japanese: Mother tongue.
Coding	MATLAB, Python, and LaTeX.

Misc

Hobbies	Running (my best time: 3:40:27 at Kyoto marathon 2023), juggling, Sci-fi novels, etc.
Note	I am a first generation student. (Both of my parents do not have a bachelor's degree or higher.)