Daisuke **Inoue**

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About me

Daisuke Inoue is a researcher at Toyota Central R&D Labs,. Inc. He has been a Sponsored Researcher at Imperial College London since September 2025. He received a B.E. degree in engineering from Osaka University in 2014 an d an M.S. degree in informatics from Kyoto University in 2017. He received a Ph.D. degree in mathematical science from the University of Tokyo in 2024. His current research interests include control engineering, multi-agent systems, and swarm intelligence.

Experience

Imperial College London — *London, UK*

Sponsored Researcher — *Sep. 2025 - Aug. 2027*

- Research on control and identification methods for large-scale systems

Toyota Central R&D Labs., Inc. — *Aichi, Japan*

Research Engineer — *Aug. 2017 - Present*

- Controller design for very large-scale systems
- Exploring applications of quantum annealing machines for control engineering

Kyoto University — *Kyoto, Japan*

Teaching Assistant — *July. 2016 - Mar. 2017*

- Teaching Assistant for Complex Analysis Class

Siemens Industry Software N.V. — *Leuven, Belgium*

Research Internship — *July. 2015 - Mar. 2016*

- Motion Controller Design for Airbus A330 based on 1-D & 3-D Co-simulation

Mitsubishi Heavy Industries, Ltd. — *Kobe, Japan*

Internship — *July. 2014*

- Development of Nuclear Power Plant Simulator

Education

The University of Tokyo — *Tokyo, Japan*

Ph.D. in Mathematical Sciences — *Mar. 2024*

- Thesis: Numerical Methods for Nonlinear Partial Differential Equations Arising from Large-Scale Multi-Agent Control Problems

Kyoto University — *Kyoto, Japan*

M.S. in Informatics — *Mar. 2017*

- Thesis: Stability Analysis of Networked Monotone Systems

Osaka University — *Osaka, Japan*

B.S. in Engineering — *Mar. 2014*

- Thesis: Stationary performance evaluation of control systems with random dither quantization

Selected Publication

Journal (Refereed)

An Uncertainty-Aware, Mesh-Free Numerical Method for Kolmogorov PDEs — *Journal of Scientific Computing*

D. Inoue, Y. Ito, T. Kashiwabara, N. Saito, and H. Yoshida — *2025*

Traffic signal optimization in large-scale urban road networks: an adaptive-predictive controller using Ising models — *IEEE Access*

D. Inoue, H. Yamashita, K. Aihara, and H. Yoshida — *2024*

Partially Centralized Model-Predictive Mean Field Games for Controlling Multi-Agent Systems — *IFAC Journal of Systems and Control*

D. Inoue, Y. Ito, T. Kashiwabara, N. Saito, and H. Yoshida — *2023*

A fictitious-play finite-difference method for linearly solvable mean field games *ESAIM: M2AN*
D. Inoue, Y. Ito, T. Kashiwabara, N. Saito, and H. Yoshida *2023*

Traffic Signal Optimization on a Square Lattice with Quantum Annealing *Scientific Reports*
D. Inoue, A. Okada, T, Matsumori, K. Aihara and H. Yoshida *2021*

Optimal Transport-based Coverage Control for Swarm Robot Systems: Generalization of the Voronoi Tessellation-based Method *IEEE Control Systems Letters*
D. Inoue, Y. Ito and H. Yoshida *2020*

Model Predictive Control for Finite Input Systems using the D-Wave Quantum Annealer *Scientific Reports*
D. Inoue, H. Yoshida *2020*

Conference (Refereed)

Stability Analysis of Logit Dynamics with Committed Minority and Internal/External Conformity Biases *Proc. 22nd IFAC World Congress*
T. Miyano, Y. Ito, D. Inoue, S. Koide, and T. Hatanaka *Yokohama, Japan, 2023*

Model Predictive Mean Field Games for Controlling Multi-Agent Systems *2021 IEEE International Conference on Systems, Man, and Cybernetics*
D. Inoue, Y. Ito, T. Kashiwabara, N. Saito, and H. Yoshida *Melbourne, Australia, 2021*

Optimal Transport-based Coverage Control for Swarm Robot Systems: Generalization of the Voronoi Tessellation-based Method *American Control Conference 2021*
D. Inoue, Y. Ito and H. Yoshida *New Orleans, USA, 2021*

Replay attack detection in control systems with quantized signals *European Control Conference 2015*
K. Kashima and D. Inoue *Linz, Austria, 2015*

Stationary performance evaluation of control systems with random dither quantization *European Control Conference 2014*
K. Kashima and D. Inoue *Strasbourg, France, 2014*

Awards

2024 **Dean's Award, Graduate School of Mathematical Sciences**, The University of Tokyo

2017 **Repayment Exemption for Students with Excellent Grades**, Japan Student Services Organization

2016 **Best presentation award at The 59th Japan Automatic Control Conference**, The Society of Instrument and Control Engineer

2015 **Research Encouragement Award at The 58th Annual Conference of the Institute of Systems, Control and Information Engineers**, The Institute of Systems, Control and Information Engineers

2014 **Research Encouragement Award at The 1st Multi-symposium on Control Systems**, The Society of Instrument and Control Engineers

Grants

2015 **Vulcanus in Europe (15,540 dollars)**, Program enabling selected students to study local languages and gain work experience in Europe through the EU-Japan Centre for Industrial Cooperation.