

Daisuke Inoue

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About me

Daisuke Inoue is a researcher at Toyota Central R&D Labs., Inc. He received a B.E. degree in engineering from Osaka University in 2014 and 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

Toyota Central R&D Labs., Inc.

RESEARCH ENGINEER

Aichi, Japan

Aug. 2017 - Present

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

Kyoto University

TEACHING ASSISTANT

Kyoto, Japan

July. 2016 - Mar. 2017

- Teaching Assistant of Complex Analysis Class

Siemens Industry Software N.V.

RESEARCH INTERNSHIP

Leuven, Belgium

July. 2015 - Mar. 2016

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

Mitsubishi Heavy Industries, Ltd.

INTERNSHIP

Kobe, Japan

July. 2014

- Development of Nuclear Power Plant Simulator

Education

The University of Tokyo

PH.D STUDENT

Tokyo, Japan

Mar. 2024

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

Kyoto University

M.S. IN INFORMATICS

Kyoto, Japan

Mar. 2017

- Thesis: Stability Analysis of Networked Monotone Systems

Osaka University

B.S. IN ENGINEERING

Osaka, Japan

Mar. 2014

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

Selected Publication

JOURNAL (REFEREED)

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

D. INOUE, Y. ITO AND H. YOSHIDA

IEEE Control Systems Letters

2020

Model Predictive Control for Finite Input Systems using the D-Wave Quantum Annealer

D. INOUE, H. YOSHIDA

Scientific Reports

2020

CONFERENCE (REFEREED)

Stability Analysis of Logit Dynamics with Committed Minority and Internal/External Conformity Biases

T. MIYANO, Y. ITO, D. INOUE, S. KOIDE, AND T. HATANAKA

Proc. 22nd IFAC World Congress

Yokohama, Japan, 2023

Model Predictive Mean Field Games for Controlling Multi-Agent Systems

D. INOUE, Y. ITO, T. KASHIWABARA, N. SAITO, AND H. YOSHIDA

2021 IEEE International Conference on Systems, Man, and Cybernetics

Melbourne, Australia, 2021

Optimal Transport-based Coverage Control for Swarm Robot Systems: Generalization of the Voronoi Tessellation-based Method

D. INOUE, Y. ITO AND H. YOSHIDA

American Control Conference 2021

New Orleans, USA, 2021

Stochastic Self-Organizing Control for Swarm Robot Systems

D. INOUE, D. MURAI, AND H. YOSHIDA

ICSI 2019

Chiang Mai, Thailand, 2019

Distributed Range-based Localization for Swarm Robot Systems using Sensor-Fusion Technique

D. INOUE, D. MURAI, Y. IKUTA AND H. YOSHIDA

SENSORNETS 2019

Prague, Czech Republic, 2020

Replay attack detection in control systems with quantized signals

K. KASHIMA AND D. INOUE

European Control Conference 2015

Linz, Austria, 2015

Stationary performance evaluation of control systems with random dither quantization

K. KASHIMA AND D. INOUE

European Control Conference 2014

Strasbourg, France, 2014

Awards

- 2017 **Repayment Exemption for Students with Excellent Grades**, Japan Student Services Organization
- 2016 **Best presentation award on The 59th Japan Automatic Control Conference**, The Society of Instrument and Control Engineer
- 2015 **Research Encouragement Award on The 58nd Annual Conference of the Institute of Systems, Control and Information Engineers**, The Institute of Systems, Control and Information Engineers
- 2014 **Research Encouragement Award on The 1st Multi-symposium on Control Systems**, The Society of Instrument and Control Engineers

Grants

- 2015 **Vulcanus in Europe (15,540 dollars)**, Selected students get to go to Europe to study the local language, and to have a working experience by EU-Japan Centre for Industrial Cooperation in Institute for International Studies and Training.