

Shumon Koga

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Work

Nonlinear and Adaptive Control Laboratory
University of California, San Diego
La Jolla, CA, 92093-0411

EDUCATION

Ph.D. in Mechanical and Aerospace Engineering, Sep. 2014-Present
University of California, San Diego

M.S. in Mechanical and Aerospace Engineering, Sep. 2014-Mar. 2016
University of California, San Diego

B.S. in Applied Physics, Apr. 2010-Mar. 2014
Keio University

PUBLICATIONS

Journal Papers

- **S. Koga**, M. Diagne, and M. Krstic, “Control and State Estimation of the One-Phase Stefan Problem via Backstepping Design”, submitted to IEEE Transactions on Automatic Control
- J. Feiling, **S. Koga**, and M. Krstic, “Extremum Seeking for Static Maps with Actuation Dynamics Governed by Diffusion PDEs”, submitted to Automatica
- J. Wang, **S. Koga**, Y. Pi, and M. Krstic, “Axial Vibration Suppression in a PDE Model of Ascending Mining Cable Elevator”, submitted to IEEE Transactions on Control Systems Technology

Referred Conference Papers

- **S. Koga**, I. Karafyllis, and M. Krstic, “Input-to-State Stability for the Control of Stefan Problem with Respect to Heat Loss at the Interface”, submitted to 2018 American Control Conference, 2018
- **S. Koga**, D. Straub, M. Diagne, and M. Krstic, “Thermodynamic Modeling and Control of Screw Extruder for 3D Printing”, submitted to 2018 American Control Conference, 2018
- **S. Koga**, L. Camacho-Solorio, and M. Krstic, “State Estimation for Lithium Ion Batteries with Phase Transition Materials”, ASME 2017 Dynamic Systems and Control Conference, 2017
- **S. Koga** and M. Krstic, “Delay Compensated Control of the Stefan Problem”, 56th IEEE Conference on Decision and Control, 2017

- **S. Koga** and M. Krstic, “Arctic Sea Ice Temperature Profile Estimation via Backstepping Observer Design”, 1st IEEE Conference on Control Technology and Applications, 2017
- **S. Koga**, R. Vazquez, and M. Krstic, “Backstepping Control of Stefan Problem with Flowing Liquid”, 2017 American Control Conference, 2017
- **S. Koga**, M. Diagne, and M. Krstic, “Output Feedback Control of the One-Phase Stefan Problem” 55th IEEE Conference on Decision and Control, 2016
- **S. Koga**, M. Diagne, S. Tang, and M. Krstic, “Backstepping Control of the One-Phase Stefan Problem” 2016 American Control Conference, 2016

WORKING EXPERIENCE

University of California at San Diego, **Sep. 2014-Present**
 Graduate Student Researcher | Advisor : Prof. Miroslav Krstic
 Research Interest : Control of free boundary PDE

NASA Jet Propulsion Laboratory, **Oct. 2017-Nov. 2017**
 JPL Visiting Student Research Program | Advisor : Dr. Ian Fenty
 Project “Estimating the Circulation and Climate of the Ocean (ECCO)”

Rensselaer Polytechnic Institute, **June 2017-Aug. 2017**
 Visiting Research Scholar | Advisor : Prof. Mamadou Diagne
 Project “Thermodynamic Modelling and Control of Screw Extruder for 3D Printing”

University of Tokyo, **Apr. 2014-Aug. 2014**
 Master Student Researcher | Advisor : Prof. Koji Tsumura, Prof. Shinji Hara
 Research Interest : Information theory, Optimal estimation

Keio University, **Apr. 2013-Mar. 2014**
 Bachelor Student Researcher | Advisor : Prof. Youhei Fujitani
 Thesis “Power put out by the Feynman Ratchet under the Feedback Control”
 Research Interest : Nonequilibrium thermodynamics, Information theory,
 Stochastic optimal control

TEACHING EXPERIENCE

- “**Nonlinear Systems**”, MAE281A, **Jan. 2016-Mar. 2016, Jan. 2017-Mar. 2017**
 Teaching Assistant, University of California, San Diego
- “**Computational Methods in Engineering**”, MAE107, **Sep. 2015-Dec. 2015**
 Shadow Teaching Assistant, University of California, San Diego

- **“Numerical Exercise of Dynamical Systems”**,
Teaching Assistant, University of Tokyo

Apr. 2014

SKILLS

Programming skills: C, C++, MATLAB, Fortran, Mathematica, LaTeX

Language : Japanese (native), English (fluent)

AWARDS

2014 : California Research Assistantships/Teaching Assistantships