

# Shumon Koga

## E-mail

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## Work

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

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## EDUCATION

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Sep. 2014-Present

**Ph.D. in Mechanical and Aerospace Engineering,**  
University of California, San Diego

Sep. 2014-Mar. 2016

**M.S. in Mechanical and Aerospace Engineering,**  
University of California, San Diego

Apr. 2010-Mar. 2014

**B.S. in Applied Physics,**  
Keio University

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## PUBLICATIONS

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### 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**, 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”, submitted to 56th IEEE Conference of 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

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## RESEARCH EXPERIENCE

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**Sep. 2014-Present**

**Nonlinear and Adaptive Control Laboratory**, Advisor : Miroslav Krstic

Research Field : Free boundary, Distributed parameter systems, Online optimization by extremum seeking

**Apr. 2014-Aug. 2014**

**Research Group of Prof. S. Hara and Prof. K. Tsumura**, Advisor : Koji Tsumura

Research Field : Information theory, Optimal estimation

**Apr. 2013-Mar. 2014**

**Research Group of Prof. Y. Fujitani**, Advisor : Youhei Fujitani

Bachelor Thesis “Power put out by the Feynman Ratchet under the Feedback Control”

Research Field : Nonequilibrium thermodynamics, Information theory, Stochastic optimal control

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## TEACHING EXPERIENCE

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- “**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**”, **Apr. 2014**  
Teaching Assistant, University of Tokyo

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## SKILLS

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

**Language :** Japanese (native), English (fluent)

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## AWARDS

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**2014 : California Research Assistantships/Teaching Assistantships**