

# Yasuhiro Miyazawa

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## Education

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**University of Washington**, Seattle, USA Sep. 2018 - Present

Ph.D., Aeronautics and Astronautics

**Tohoku University**, Sendai, Japan Oct. 2014 - Sep. 2018

B.S., Mechanical and Aerospace Engineering

## Research Experience

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**University of Washington**, Seattle, USA

Laboratory for Engineered Materials and Structures

- Research Assistant (Advisor: Prof. Jinkyu Yang) Sep. 2018 - Present
  - Realization of extreme nonlinear wave events in the mechanical platform.
  - Study and design of origami-inspired impact mitigation system.
  - Study and design of origami-inspired mechanical and structural unit.
- Visiting Research Assistant (Advisor: Prof. Jinkyu Yang) Mar. 2017 - Aug. 2017
  - Investigated the chaotic behavior of origami-based mechanical unit.
  - Studied the fatigue of origami-based mechanical unit.
  - Designed strain-softening and strain-hardening origami-based mechanical unit.

**Tohoku University**, Sendai, Japan

Computational Fluid Dynamics Laboratory

- Research Assistant (Advisor: Prof. Soshi Kawai) Apr. 2016 - Sep. 2018
  - Analyzed the turbulent boundary layer flow statistics on the flat-plate with wall heating at the supercritical pressures, obtained from direct numerical simulations.

## Teaching Experience

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**Teaching Assistant**

University of Washington

- AA311 Atmospheric Flight Mechanics Sep. 2018 - Dec. 2018
- AA331 Aerospace Structures I Jan. 2019 - Mar. 2019
  - Course evaluation score: 5.0/5.0
- AA332 Aerospace Structures II Apr. 2019 - Jun. 2019
  - Course evaluation score: 5.0/5.0

## Mentoring

University of Washington

- Undergraduate Students

- Casper Hsiao, Elaine Xiong

Oct. 2019 - Present

- Jiacheng Chen, David Kim

Jun. 2019 - Present

- Silas Chu

Oct. 2019 - Dec. 2019

- Gavin Chan, Yi Wang, Jiaping Zhen

Jun. 2019 - Aug. 2019

## Awards

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1. Global-HAGI Scholarship Award (President Scholarship) Aug. 2016 - Aug. 2017

## Publications

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3. **Y. Miyazawa**, H. Yasuda, H. Kim, K. Tsujikawa, J. Raney, J. Yang, “Reconfigurable Self-locking Origami-based Metamaterials with In-situ Stiffness Tuneability,” (to be submitted).
2. H. Yasuda, K. Yamaguchi, **Y. Miyazawa**, R. Wiebe, J. Raney, J. Yang, “Data-driven prediction and analysis for chaotic folding motions of bistable origami,” (to be submitted).
1. H. Yasuda, **Y. Miyazawa**, C. Chong, E. G. Charalampidis, P. G. Kevrekidis, and J. Yang, Origami-based impact mitigation by rarefaction wave creation, *Science Advances*, 5, eaau2835, 2019. *Media coverage by 25 news outlets, including Reuters, Science Daily, MSN, Geekwire, Phys.org.*

## Conference Proceedings

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1. H. Yasuda, **Y. Miyazawa**, and J. Yang, Tunable wave propagation in Origami-based Reconfigurable Mechanical Metamaterials, SPIE – Smart Structures / NDE, Denver, CO, March, 2018.

## Conference Presentations

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†*Presenter*

5. J. O’Neil<sup>†</sup>, **Y. Miyazawa**, J. Yang, “Mitigation of impact applied to payload via origami-based mechanical metamaterials,” *SPIE – Smart Structures / NDE: Health Monitoring of Structural and Biological Systems IX*, CA, Apr. 2020.
4. **Y. Miyazawa**<sup>†</sup>, H. Yasuda, J. Yang, “Feasibility study on the formation of the rogue waves in origami-based mechanical metamaterials,” *SPIE – Smart Structures / NDE: Health Monitoring of Structural and Biological Systems IX*, CA, Apr. 2020.
3. K. Yamaguchi<sup>†</sup>, H. Yasuda, **Y. Miyazawa**, R. Wiebe, J. Raney, J. Yang, “Data-driven prediction and analysis of chaotic folding motions in bistable origami,” Physics Informed Machine Learning Workshop, Seattle, WA, Jun. 2019 (Poster presentation).

2. H. Yasuda, **Y. Miyazawa**, J. Yang<sup>†</sup>, “Origami: a versatile method for designing metamaterials with adaptive mechanical properties,” *ICAST2018: 29th International Conference on Adaptive Structures and Technologies*, Seoul, Korea, Sep. 2018 (invited).
1. H. Yasuda, **Y. Miyazawa**, J. Yang<sup>†</sup>, “Conversion of compressive impact to tensile stress waves via origami-based mechanical metamaterials,” *ASME - IMECE*, Pittsburgh, PA, Nov. 2018.

## Patents Submitted

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1. J. Yang, H. Yasuda, **Y. Miyazawa**, K. Yamaguchi, “Aircraft wing motion prediction systems and associated methods”, (provisional patent filing in progress).

## Proposal Writing (Helped PI or co-PI)

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1. NSF-DCSD, *Quest for Mechanical Rogue Waves in One-dimensional Discrete Lattices*, PI: Jinkyu Yang, Amount: \$ 432,407.00 (Sep. 2019- Aug. 2022).

## Invited Talk

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1. “Origami innovation”, *Yasuda Women’s College Global/Greater Language And Business Overseas Seminar (G. LABOS III)*, Seattle, August 2019.