Yang Liu

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CONTACT

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EDUCATION

Ph.D. in Mechanical Engineering, Waseda University March 2023

Team for Advanced Flow Simulation and Modeling (TAFSM), Tokyo, Japan

Dissertation: "Carrier-Domain Method for High-Resolution Computation of Time-Periodic Long-Wake Flows and Application to Wind Turbine Wakes"

Advisor: Kenji Takizawa, Tayfun E. Tezduyar

M.Eng in Mechanics, Beihang University January 2016

School of Aeronautic Science and Engineering, Institute of Fluid Mechanics, Beijing, China

B.Eng in Safety Engineering, Kunming University of Science and Technology June 2012

Faculty of Land Resources Engineering, Kunming, China

RESEARCH EXPERIENCE

Research Associate April 2023 – Present

Waseda Research Institute for Science and Engineering, Waseda University, Tokyo, Japan

Isogeometric analysis, mesh moving methods, full-scale wind turbines and wind farm modeling

Visiting Scholar January 2022 – April 2022

Department of Mechanical Engineering, Rice University, Houston, USA

Multi-Domain Method (MDM), Carrier-Domain Method (CDM), long-wake flows

Graduate Researcher September 2019 – March 2023

TAFSM, Waseda University, Tokyo, Japan

Fluid-structure interaction (FSI), mesh generation for complex geometry

Research Assistant August 2021 – February 2022

TAFSM, Waseda University, Tokyo, Japan

Fluid-structure interaction isogeometric analysis of variable geometry turbocharger (VGT)

Teaching Assistant October 2019 – March 2023

Department of Modern Mechanical Engineering, Waseda University, Tokyo, Japan

Isogeometric analysis, parallel computing

Graduate Researcher September 2013 – January 2016

Institute of Fluid Mechanics, Beihang University, Beijing, China

Wind tunnel testing for wing aerodynamics, design of wind tunnel test models, force measurement

HONORS AND AWARDS

Best CFD Graphics Award (CFD36) December 2022

The Japan Society of Fluid Mechanics, Tokyo, Japan

Open Innovation Ecosystem Program (W-SPRING) October 2021 – October 2022

Waseda University, Tokyo, Japan

Scholarship for Young Doctoral Students December 2019

Faculty of Science and Engineering, Waseda University, Tokyo, Japan

Outstanding Student Scholarship September 2013 – January 2016

Beihang University, Beijing, China

Outstanding Student Scholarship September 2009 – September 2010

Kunming University of Science and Technology, Kunming, China

JOURNAL PUBLICATIONS

J4. **Y. Liu**, Y. Otoguro, K. Takizawa, T.E. Tezduyar, "Space–Time Isogeometric Analysis of NREL 5MW wind turbine rotor and tower aerodynamics", *Computational Mechanics*, published online, (2024), doi: 10.1007/s00466-024-02574-1

J3. **Y. Liu**, K. Takizawa, T.E. Tezduyar, "High-resolution 3D computation of time-periodic long-wake flows with the Carrier-Domain Method and Space–Time Variational Multiscale method with isogeometric discretization", *Computational Mechanics*, **74** (2024) 1–22, doi: 10.1007/s00466-023-02419-3

J2. **Y. Liu**, K. Takizawa, T.E. Tezduyar, T. Kuraishi, and Y. Zhang, "Carrier-Domain Method for high-resolution computation of time-periodic long-wake flows", *Computational Mechanics*, **71** (2023) 169–190, doi: 10.1007/s00466-022-02230-6

J1. **Y. Liu**, K. Takizawa, Y. Otoguro, T. Kuraishi, and T.E. Tezduyar, "Flow computation with the Space–Time Isogeometric Analysis and higher-order basis functions in time", *Mathematical Models and Methods in Applied Sciences*, **32** (2022) 2445–2475, doi: 10.1142/S0218202522500579

CONFERENCE PAPERS

C7. Y. Saiki, **Y. Liu**, Z. Xu, T. Kuraishi, Y. Otoguro, H. Akira, T. Nakamura, K. Takizawa, and T.E. Tezduyar, "Differences in fluid responses in similar vibration modes for elucidating resonance phenomena in turbocharger turbines", in *Proceedings of the 29th Japan Society for Computational Engineering and Science Conference*, Kobe, Japan, (2024).

C6. L. Lin, **Y. Liu**, T. Terahara, T. Kuraishi, K. Takizawa, and T.E. Tezduyar , "Wake flow analysis of a helicopter in forward flight", in *Proceedings of the 29th Japan Society for Computational Engineering and Science Conference*, Kobe, Japan, (2024).

C5. Y. Saiki, T. Kuraishi, **Y. Liu**, Z. Xu, T. Nakamura, K. Takizawa, and T.E. Tezduyar, "Fluid analysis of variable geometry turbocharger considering rotation and vibration of turbine blade", in *Proceedings of the 37th Symposium on Computational Fluid Dynamics*, Nagoya, Japan, (2023).

C4. **Y. Liu**, T. Terahara, N. Pritchard, T. Kuraishi, K. Takizawa, and T.E. Tezduyar , "Space–Time Isogeometric Analysis of a helicopter with main and tail rotors", in *Proceedings of the 37th Symposium on Computational Fluid Dynamics*, Nagoya, Japan, (2023).

C3. **Y. Liu**, K. Takizawa, T.E. Tezduyar, T. Kuraishi, and Y. Zhang, "Carrier-Domain Method for high-resolution computation of time-periodic long-wake flows and application to wind turbine wakes", in *Proceedings of the 36th Symposium on Computational Fluid Dynamics*, Tokyo, Japan, (2022).

C2. **Y. Liu**, S. Yamasaki, Y. Zhang, T. Kuraishi, F. Zhang, K. Takizawa, and T.E. Tezduyar, "Multi-Domain computation of wind turbine wake flows", in *Proceedings of the Mechanical Engineering*

Congress 2020 Japan, Nagoya, Japan, (2020).

C1. S. Yamasaki, **Y. Liu**, Y. Zhang, T. Kuraishi, K. Takizawa, and T. E. Tezduyar, "Effective Isogeometric Analysis for multiple wind turbines", in *Proceedings of the 25th Japan Society for Computational Engineering and Science Conference*, Kitakyushu, Japan, (2020).

PRESENTATION AND TALKS

T1. **Y. Liu**, K. Takizawa, T.E. Tezduyar, T. Kuraishi, and Y. Zhang, "Carrier-Domain Method for high-resolution computation of time-periodic long-wake flows", in *Proceedings of the International workshop on Bifurcation Governed by Partial Differential Equations*, Tokyo, Japan, (2022).