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Education B.Eng. Engineering, Waseda University, March 2014
M.Eng. Engineering, Waseda University, March 2016
Ph.D. Engineering, Waseda University, March 2019

Honors and Awards

Graduate Program for Embodiment Informatics (Waseda University Program for Leading Graduate Schools), April 2014 – March 2019
Fellow Award for Outstanding Young Engineers, Japan Society of Mechanical Engineers (2014)
Visualization Award for Best Performance, 20th Japan Society for Computational Engineering and Science Conference (2015) (T. Kanai, K. Takizawa and T.E. Tezduyar)
Visualization Award for Outstanding Performance, 20th Japan Society for Computational Engineering and Science Conference (2015) (T. Kanai, K. Takizawa and T.E. Tezduyar)
Altair Award Bronze Prize, KSME–JSME Joint Symposium on Computational Mechanics & CAE 2015 (2015)
Research Fellowship for Young Scientists (DC1) 16J10373 (JSPS), April 2016 – March 2019
Special Recognition Award, 4th Waseda Vision 150 Student Competition (2016)
Master’s Thesis Presentation Award, Graduate School of Environment and Energy Engineering, Waseda University (2016)
IACM Travel Award for attending WCCM XII, International Association for Computational Mechanics (2016)
Outstanding Performance Award, 11th “Beautiful” Panel Exhibition for Science and Technology, Organization on Science and Technology (2017)
JAXA Special Award, HP Mars Home Planet - Education League JP -, HP Japan inc. (2017)
Early Bird Young Scientists’ Community 2018, Waseda Research Institute for Science and Engineering (2018)

Certifications

JSME-Certified Computational Mechanics Engineer, Grade 1 (17-THFL1-SP0025)

Publications Summary

4	ISI-Indexed Journal Articles	1	Other Journal Article
6	Invited Conference Papers	11	Contributed Conference Papers

Publications

Journal Articles Indexed by the Web of Science

- 1 K. Takizawa, T.E. Tezduyar, R. Kolesar, C. Boswell, **T. Kanai**, and K. Montel, “Multiscale methods for gore curvature calculations from FSI modeling of spacecraft parachutes”, *Computational Mechanics*, **54** (2014) 1461–1476, doi: [10.1007/s00466-014-1069-2](https://doi.org/10.1007/s00466-014-1069-2).
- 2 K. Takizawa, T.E. Tezduyar, and **T. Kanai**, “Porosity models and computational methods for compressible-flow aerodynamics of parachutes with geometric porosity”, *Mathematical Models and Methods in Applied Sciences*, **27** (2017) 771–806, doi: [10.1142/S0218202517500166](https://doi.org/10.1142/S0218202517500166).
- 3 **T. Kanai**, K. Takizawa, T.E. Tezduyar, T. Tanaka, and A. Hartmann, “Compressible-flow geometric-porosity modeling and spacecraft parachute computation with isogeometric discretization”, *Computational Mechanics*, **63** (2019) 301–321, doi: [10.1007/s00466-018-1595-4](https://doi.org/10.1007/s00466-018-1595-4).
- 4 **T. Kanai**, K. Takizawa, T.E. Tezduyar, K. Komiya, M. Kaneko, K. Hirota, M. Nohmi, T. Tsuneda, M. Kawai, and M. Isono, “Methods for computation of flow-driven string dynamics in a pump and residence time”, *Mathematical Models and Methods in Applied Sciences*, published online, DOI: [10.1142/S021820251941001X](https://doi.org/10.1142/S021820251941001X), February 2019, doi: [10.1142/S021820251941001X](https://doi.org/10.1142/S021820251941001X).

Other Journal Articles

- 1 K. Takizawa, T.E. Tezduyar, and **T. Kanai**, “Spacecraft-parachute computational analysis and compressible-flow extensions”, *Japan Aeronautical and Space Sciences Magazine*, **65** (9) (2017) 280–283, in Japanese, doi: [10.14822kjsass.65.9.280](https://doi.org/10.14822kjsass.65.9.280).

Invited Conference Papers

- 1 **T. Kanai**, K. Takizawa, R. Kolesar, and T.E. Tezduyar, “Geometric-porosity model for the NASA drogue parachute”, in *Extended Abstracts of the 18th International Conference on Finite Elements in Flow Problems*, Taipei, Taiwan, (2015).
- 2 **T. Kanai**, K. Takizawa, and T.E. Tezduyar, “Fluid–structure interaction analysis of a disk-gap-band parachute in compressible-flow regime”, in *Extended Abstracts of 13th US National Congress on Computational Mechanics*, California, USA, (2015).
- 3 **T. Kanai**, K. Takizawa, and T.E. Tezduyar, “Structural and fluid mechanics analysis of a disk-gap-band parachute at mach number 2.0”, in *Extended Abstracts of KSME–JSME Joint Symposium on Computational Mechanics & CAE 2015*, Tokyo, Japan, (2015).
- 4 **T. Kanai**, K. Takizawa, and T.E. Tezduyar, “Structural and fluid mechanics isogeometric analysis of a disk-gap-band parachute at mach 1.4–2.0”, in *Extended Abstracts of the 12th World Congress on Computational Mechanics (WCCM XII) and the 6th Asia–Pacific Congress on Computational Mechanics (APCOM VI)*, Seoul, Korea, (2016).
- 5 **T. Kanai**, K. Takizawa, and T.E. Tezduyar, “Disk-gap-band parachute supersonic flow analysis with high-fidelity geometry and boundary-layer representation”, in *Extended Abstracts of the 19th International Conference on Finite Elements in Flow Problems*, Rome, Italy, (2017).
- 6 **T. Kanai**, K. Takizawa, T.E. Tezduyar, T. Tanaka, and A. Hartmann, “Spacecraft parachute compressible-flow computation with geometric-porosity modeling and isogeometric discretization”, in *Proceedings of IGA 2018*, Texas, USA, (2018).

Contributed Conference Papers

- 1 **T. Kanai**, K. Takizawa, Y. Tsutsui, R. Kolesar, and T.E. Tezduyar, “FSI simulation of a drogue chute”, in *Proceedings of JSME 26th Computational Mechanics Division Conference*, Saga, Japan, (2013).
- 2 **T. Kanai**, K. Takizawa, R. Kolesar, and T.E. Tezduyar, “Geometric-porosity modeling for ribbon parachutes in compressible-flow regime”, in *Proceedings of the 58th Conference on Space Science and Technology*, Nagasaki, Japan, (2014).
- 3 **T. Kanai**, K. Takizawa, and T.E. Tezduyar, “Aerodynamic analysis of a disk-gap-band parachute”, in *Proceedings of the 20th Japan Society for Computational Engineering and Science Conference*, Ibaraki, Japan, (2015).

- 4 T. Terahara, K. Takizawa, Y. Tsutsui, **T. Kanai**, and T.E. Tezduyar, “Aerodynamic analysis of a ram-air parachute”, in *Proceedings of the 20th Japan Society for Computational Engineering and Science Conference*, Ibaraki, Japan, (2015).
- 5 **T. Kanai**, K. Takizawa, and T.E. Tezduyar, “Aerodynamic analysis of a disk-gap-band parachute at mach number 2.0”, in *Proceedings of the 59th Conference on Space Science and Technology*, Kagoshima, Japan, (2015).
- 6 **T. Kanai**, K. Takizawa, and T.E. Tezduyar, “Geometric-porosity modeling for ribbon parachutes in compressible-flow regime”, in *Proceedings of the 29th Symposium on Computational Fluid Dynamics*, Fukuoka, Japan, (2015).
- 7 **T. Kanai**, K. Takizawa, and T.E. Tezduyar, “Disk-gap-band parachute supersonic flow analysis with high-fidelity geometry and boundary-layer representation”, in *Proceedings of the 47th Japan Society for Aeronautical and Space Sciences Conference*, Tokyo, Japan, (2016).
- 8 **T. Kanai**, K. Takizawa, and T.E. Tezduyar, “Disk-gap-band parachute supersonic FSI analysis with high-fidelity geometry and boundary-layer representation”, in *Proceedings of JSME 94th Fluids Engineering Conference*, Yamaguchi, Japan, (2016).
- 9 T. Tanaka, **T. Kanai**, K. Takizawa, and T.E. Tezduyar, “Compressible-flow analysis of ribbon parachutes with modeled geometric porosity”, in *Proceedings of the 30th Symposium on Computational Fluid Dynamics*, Tokyo, Japan, (2016).
- 10 K. Hirota, **T. Kanai**, M. Kaneko, K. Komiya, K. Takizawa, and T.E. Tezduyar, “A study on fibrous-material passage probability in turbomachinery based on flow-driven string motion and flow residence time”, in *Proceedings of the 23rd Japan Society for Computational Engineering and Science Conference*, Aichi, Japan, (2018).
- 11 K. Komiya, **T. Kanai**, Y. Ootoguro, M. Kaneko, K. Hirota, Y. Zhang, K. Takizawa, T.E. Tezduyar, M. Nohmi, T. Tsuneda, M. Kawai, and M. Isono, “Computational analysis of flow-driven string dynamics in a pump and residence time calculation”, *IOP conference series earth and environmental science*, **240** (2019) 062014, doi: [10.1088/1755-1315/240/6/062014](https://doi.org/10.1088/1755-1315/240/6/062014).

Invited Presentations

International

- 1 Advances in Computational Fluid–Structure Interaction and Flow Simulation (AFSI 2014) — A Conference Celebrating the 60th Birthday of Tayfun E. Tezduyar, Tokyo, March 2014.

Japanese

- 1 The 2nd Symposium “Challenges of the First Year”, Waseda University, Tokyo, January 2015.
- 2 The 3rd Symposium “Challenges of the Second Year”, Waseda University, Tokyo, October 2015.

March 29, 2019