

Beverley K.W. YEO

Curriculum Vitae



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Research Interests: High-performance computing, GPU programming, and higher-order numerical methods for compressible fluid flows with applications to aerodynamics and aircraft propulsion.

EDUCATION

Stanford University, Stanford, CA, USA

Doctor of Philosophy (Mechanical Engineering)

Sep 2023 - present

Advisor: Prof. Matthias IHME

CGPA: 3.90/4.00

Nanyang Technological University, Singapore (NTU)

Master of Engineering (Mechanical & Aerospace Engineering)

Aug 2021 - Feb 2023

Advisor: Prof. Wai Lee CHAN

CGPA: 4.63/5.00

Thesis: Investigating Galilean invariance in CFD ↗

Bachelor of Engineering (Aerospace Engineering, Honors with Distinction)

Aug 2017 - Jun 2021

Advisor: Prof. Daniel NEW

CGPA: 4.37/5.00

Thesis: On the flow behavior of confined vortex-rings ↗

Purdue University, West Lafayette, IN, USA – Study abroad

Jan 2020 - May 2020

PROFESSIONAL EXPERIENCE

Graduate Research Assistant

Sep 2023 - present

Supervisor: Prof. Matthias IHME

Department of Mechanical Engineering, Stanford University, Stanford, CA, USA

- Development of hardware-independent discontinuous Galerkin methods using Python and JAX
- Optimization of discontinuous Galerkin codes for parallel high-performance computers
- Investigations of machine-precision and floating-point errors in higher-order numerical methods
- GPU acceleration of discontinuous Galerkin methods for compressible flows

Research Engineer

Aug 2022 - Aug 2023

Supervisor: Dr. Daniel WISE, Dr. Vinh-Tan NGUYEN

Fluid Dynamics Department, Institute of High Performance Computing (IHPC)

Agency for Science, Technology And Research (A*STAR), Singapore

- Integration of harmonic balance methods and lower-order models for aerodynamic force calculation and transonic flutter prediction using SU2 and NASTRAN
- Funded by Bombardier Inc. under Singapore Aerospace Programme Cycle 16

Project Officer

May 2021 - Aug 2022

Supervisor: Prof. Wai Lee CHAN, Prof. Basman ELHADIDI

School of Mechanical and Aerospace Engineering, Nanyang Technological University, Singapore

- Investigating Galilean invariance assumptions in LES and DNS of bluff-body flows
- Overset mass conservation and Galilean-invariant boundary treatments in OpenFOAM
- Funded by Ministry of Education Academic Research Fund Tier 1 Grant

Undergraduate Research Assistant **Dec 2017 - Jun 2021***Supervisor: Prof. Daniel NEW**School of Mechanical & Aerospace Engineering, Nanyang Technological University, Singapore*

- Unsteady simulations of vortex-rings in confined cylindrical geometries using ANSYS Fluent
- Particle-image velocimetry of vortex-ring interactions with free surfaces and density interfaces
- Planar laser-induced fluorescence and colored dye flow visualizations of various vortex-rings

Undergraduate Research Assistant **May 2019 - Jun 2021***Supervisor: Prof. Basman ELHADIDI**School of Mechanical & Aerospace Engineering, Nanyang Technological University, Singapore*

- Dynamic pitch response test in wind tunnel for aerodynamic analysis of VTOL UAVs
- Least-square regression models and system identification using MATLAB for stability analysis

Project Manager Intern **Sep 2020 - May 2021***Supervisor: Prof. Wai Lee CHAN, Prof. Jean LEE**School of Humanities & Social Sciences, Nanyang Technological University, Singapore*

- Statistical analysis for engineering communication skills pedagogical study
- Funded by Ministry of Education Tertiary Research Fund Grant

Research Intern **Jun 2020 - Aug 2020***Center for Aerodynamics and Propulsion, Temasek Laboratories @ National University of Singapore*

- LES for aerodynamic and aeroacoustic modelling of propeller blades using ANSYS Fluent

PUBLICATIONS & PRESENTATIONS**Journal Papers**

- Yeo K.W.B., Ihme M. (2026). *Development of a mixed-precision discontinuous Galerkin framework for compressible flow calculations*. Accepted for publication in AIAA SciTech Forum 2026.
- Yeo K.W.B., Chan W.L., Elhadidi B. (2025). *Challenging the Galilean Invariance assumption in CFD*. Submitted to *Physical Review Fluids*, under review.
- New T.H., Yeo K.W.B., Koh J.Y., Long J. (2024). *Flow transitions of head-on vortex ring collisions with contaminated air-water interfaces*. *Physics of Fluids* 36(1):014112. doi:[10.1063/5.0176897](https://doi.org/10.1063/5.0176897)
- Yeo K.W.B., Koh J.Y., Long J., New T.H. (2020). *Flow transitions in collisions between vortex-rings and density interfaces*. *Journal of Visualization* 23:783-791. doi:[10.1007/s12650-020-00666-7](https://doi.org/10.1007/s12650-020-00666-7)

Conference Presentations (Oral)

- Yeo K.W.B., Ihme M. (2024). *Development of a machine learning-enabled high-order discontinuous Galerkin solver for compressible flow simulations*. 77th Annual Meeting of the APS Division of Fluid Dynamics, Salt Lake City, UT, USA, 2024.

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- Yeo K.W.B., Koh J.Y., Long J., New T.H. (2019). *Flow transitions in collisions between vortex-rings and density interfaces*. 15th Asian Symposium on Visualization, Busan, South Korea, 2019.
 - Yeo K.W.B., Koh J.Y., Long J., New T.H. (2019). *Flow transitions in collisions between vortex-rings and free surfaces*. 17th European Turbulence Conference, Turin, Italy, 2019.

HONORS & AWARDS

- 2022** A*STAR National Science Scholarship (PhD)
- 2021** Professional Attachment Certificate of Distinction
- 2020** AY2019/20 Dean's List, School of Mechanical & Aerospace Engineering, NTU
Spring 2020 Dean's List, Purdue University Aeronautics & Astronautics
CNYSP Research Award (Gold)
- 2019** Best Presentation Student Award, 15th Asian Symposium on Visualization
- 2017** Nanyang Scholarship (CN Yang Scholars Programme)
NTU College of Engineering (CoE) Dean's Award
Mechanical & Aerospace Engineering Enrichment Grant

ACADEMIC AFFILIATIONS

American Institute of Aeronautics & Astronautics (AIAA) Student Member	May 2025 - present
American Physical Society (APS) Student Member	Jun 2024 - present
International Forum for Aviation Research (IFAR) Early-Career Network	Jan 2023 - present
Agency for Science, Technology and Research, Singapore (A*STAR)	Aug 2022 - present

TEACHING & SERVICE

Teaching Assistant - Gas-Turbine Design Analysis, Stanford University	Sep 2025 - Dec 2025
Responsibilities: Holding office hours, grading problem sets, designing coding tutorial	
Scientists-in-Schools Program, Zhangde Primary School	Sep 2022 - Apr 2023
Responsibilities: Developing lesson plan and coding demonstrations	
Peer Instructor, CN Yang Scholars Club	Sep 2019 - Aug 2020
Responsibilities: Designing extra instructional materials, preparing exam solutions, mentoring, tutoring	

MISCELLANY

- Web design and development: [FX Lab website](#) ↗, [BLASTNet](#) ↗
- Aerospace projects: [Weird Takeoff & Landing UAV](#) ↗, [Mini Delivery Quadcopter](#) ↗
- Serial warranty voiding: Desktop PCs, mechanical keyboards

– References available on request.