

# Wai Tong Chung

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## Education

### Stanford University

Stanford, CA

*Ph.D. Mechanical Engineering. Advised by Prof. Matthias Ihme.*

*Sept. 2018 - Exp. June 2024*

**Research Focus:** Machine Learning, AI4Science, High-Performance Computing, Energy.

**Courses:** Deep Learning, Computer Vision, Mining Massive Datasets, Parallel Computing, Linear Algebra, Numerical Methods, Fluid Mechanics, etc.

### Imperial College London

United Kingdom

*B.Eng. M.Eng. Mechanical Engineering. First Class Honours.*

*Sept. 2013 - Aug. 2017*

**Thesis:** Two-dimensional Probability Density Function Model for HCCI Combustion.

## Experience

### Stanford University

Stanford, CA

*Machine Learning Research Assistant*

*Sept. 2018 - Exp. June 2024*

Investigating machine learning for multi-physics energy, propulsion, and wildfire modeling.

### Lawrence Livermore National Laboratory

Livermore, CA

*Deep Learning Research Intern*

*June 2022 - Sept. 2022*

Explored deep learning methods for climate modeling and COVID-19 drug discovery.

### JPMorgan Chase & Co.

United Kingdom

*Financial Messaging Software Engineer*

*Sept. 2017 - Aug. 2018*

Developed, deployed, and tested a Java-based global financial messaging application.

### Imperial College London

United Kingdom

*Environmental Engineering Research Assistant*

*June 2017 - Aug. 2017*

Prototyped light and acoustic sensor networks for flood warning systems in Nepal.

## Selected Publications\*

**W.T. Chung**, K.S. Jung, J. H. Chen, M. Ihme, The Bearable Lightness of Big Data: Towards Massive Public Datasets in Scientific ML. In: *ICML AI4Science Workshop*, 2022. [[.pdf](#)]

D.D. Wu, **W.T. Chung**, M. Ihme, ML4LM: ML for Safely Landing on Mars. In: *NeurIPS ML4PS Workshop*, 2022. [[.pdf](#)]

M. Ihme, **W.T. Chung**, A.A. Mishra, Combustion ML: Principles, Progress, and Prospects, *Prog. Energy Combust. Sci.* 91:101010, 2022.[[.pdf](#)]

**W.T. Chung**, A.A. Mishra, M. Ihme, Interpretable Data-driven Methods for Subgrid-scale Closure in LES for Transcritical LOX/GCH<sub>4</sub> Combustion, *Combust. Flame* 239:111758, 2022. [[.pdf](#)]

**W.T. Chung**, A.A. Mishra, N. Perakis, M. Ihme, Accelerating High-fidelity Combustion Simulations with Classification Algorithms. In: *AAAI MLPS Spring Symposium*, 2021. [[.pdf](#)]

\*Refer to my [Google Scholar](#) for a complete list.

## Awards

Stanford Climate-Centered AI Affinity Group Award	2023
Stanford Human-Centered AI Graduate Fellowship	2022-2023
Stanford School of Engineering Graduate Fellowship	2018-2019
Imperial College Mechanical Engineering Most Outstanding Thesis Prize	2017
Imperial College Mechanical Engineering Dean's List (Top 10% of Class)	2017
Imperial College Engineering Undergraduate Research Award	2017

## Professional Activities

**Invited Speaker**, Potential and Challenges of ML in Industrial and Environmental Reacting Flows. In: *K1st World Symposium*, 2022.

**Invited Speaker**, The Bearable Lightness of Big Data: Towards Massive Public Datasets in Scientific ML. In: *Stanford HAI Graduate Seminar*, 2022.

**Reviewer** for the *ASME Turbo Expo*, 2023.

**Reviewer** for the *ML and the Physical Sciences Workshop at NeurIPS*, 2021, 2022.

**Reviewer** for the *AI for Science: Progress and Promises Workshop at NeurIPS*, 2022.

**Composed** Google Award for Inclusion Research Grant (\$60,000): *Forecasting Wildfire Pollutant Transport using Physics-informed ML* (PI: Prof. Matthias Ihme), 2022. [[info](#)]

**Composed** NERSC Award Grant (11.2M CPU hours): *High-fidelity simulations of multi-mode compression and alternative-fuel effects in rapid compression machines*, 2022. [[info](#)]

**Composed** NASA Early Stage Innovations Grant (\$650,000): *Supersonic Retropropulsion Wind Tunnel Data Analysis* (PI: Prof. Matthias Ihme), 2021. [[info](#)]

**Session Chair** for Numerical/Computational Combustion at the *Int. Symp. Combust.*, 2022.

**Lead organizer** for *Stanford HAI Climate-Centered AI Seminar Series*, 2023.

**Co-organizer** for *Stanford Mechanical Engineering Student Committee*, 2019-2022.

**Co-organizer** for *Imperial College London Mechanical Engineering Society*, 2016-2017.

## Open-source Projects

BLASTNet simulation dataset. [[blastnet.github.io](https://blastnet.github.io)]

Multi-GPU deep learning tutorials for 3D datasets. [[github.com/blastnet/kaggle\\_tutorials](https://github.com/blastnet/kaggle_tutorials)]

Intro. to ML tutorials. [[github.com/IhmeGroup/CombML\\_Tutorials](https://github.com/IhmeGroup/CombML_Tutorials)]

## Skills

### Programming

Proficient: Python, PyTorch, TensorFlow, MATLAB.

Familiar: C++, PyG, PySpark, MPI, Java.

### Languages

Proficient: English, Malay.

Familiar: Mandarin, Cantonese.