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 multiphysics 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.

Awards

Stanford Climate-Centered AI Affinity Group Award	2023
Stanford HAI Fellowship	2022-2023
Stanford School of Engineering 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 Summer Research Award	2017

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. 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/GCH4 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.*

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.

Session Chair for Numerical/Computational Combustion at the *39th International Symposium on Combustion*, 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]
Multi-GPU deep learning tutorials for 3D datasets. [github.com/blastnet/kaggle_tutorials]
Intro. to ML tutorials. [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.