

# HAOTIAN HANG

December, 2021

## PERSONAL INFO

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**Birth Year:** 1997

**Citizenship:** People's Republic of China

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## EDUCATION

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- 2020 - **University of Southern California**, Los Angeles, CA  
Ph.D. Student, Mechanical Engineering
- 2015 - 2019 **Shanghai Jiao Tong University**, Shanghai, China  
B.S. Aeronautics and Astronautics Engineering, June 2019 (Average Score: 89.22/100)

## EMPLOYMENT

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- 2020 - **Research Assistant**, Bio-Inspired Motion Lab at USC, PI: *Prof. Eva Kanso*
- 2019 **Intern Algorithmic Engineer**, Shanghai Hongpu Information Technology Co., Ltd.
- 2016 - 2019 **Research Assistant**, J.C.Wu Center for Aerodynamics, PI: *Prof. Hong Liu*

## PUBLICATIONS

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- 2022 3. Hang, H., Heydari, S., Costello, J., & Kanso, E. (2022). *Active tail flexion in concert with passive hydrodynamic forces improves swimming speed and efficiency*. Journal of Fluid Mechanics, 932, A35.
- 2021 2. Xiang, Y., Hang, H., Qin, S., and Liu, H. (2021). *Scaling analysis of the circulation growth of leading-edge vortex in flapping flight*. Acta Mech. Sin.
- 2020 1. Hang, H., Yu, B., Xiang, Y., Zhang, B., and Liu, H. (2020). *An objective-adaptive refinement criterion based on modified ridge extraction method for finite-time Lyapunov exponent (FTLE) calculation*. Journal of Visualization, 23(1), 81-95.

## RESEARCH INTERESTS/EXPERIENCE

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- 2020 - **Flowtaxis via RL**, supervised by *Prof. Eva Kanso, Dr. Josh Merel*  
joint with *Sina Heydari, Yusheng Jiao, Feng Ling, Basile Radisson*  
Using reinforcement learning to follow vortical wakes based on local flow sensory
- 2020 - **Flexion in fish swimming**, supervised by *Prof. Eva Kanso, Prof. John H. Costello*  
joint with *Sina Heydari*  
Study the role of active and passive flexion on swimming speed and efficiency of a self-propelling pitching plate using vortex sheet method  
Parametric study on the effect of flexion phase, flexion angle and flexion ratio on swimming performance
- 2016 - 2019 **Mechanisms of high generation in insects flight**, supervised by *Prof. Hong Liu* and *Dr. Yang Xiang*  
joint with *Dr. Suyang Qing*  
Experimental study on the role of the phase difference on leading edge vortex formation using a scaled robotic flapping wing model in glycerin  
Find a scaling law between passive rotation and active translation in flapping wing model
- 2016 - 2019 **AMR for FTLE calculation**, supervised by *Prof. Hong Liu, Prof. Bin Zhang, Bin Yu* and *Dr. Yang Xiang*  
Construct a physics-based adaptive refinement method for finite-time Lyapunov exponent calculation

## TALKS/PRESENTATIONS

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- 2021 **APS Division of Fluid Dynamics Meeting**, Active tail flexion in concert with passive hydrodynamic forces improves swimming speed and efficiency
- 2020 **APS Division of Fluid Dynamics Meeting**, Flowtaxis in the wakes of oscillating airfoils
- 2018 **APS Division of Fluid Dynamics Meeting**, Passive rotation of a flapping wing with an inhomogeneous mass distribution

## TEACHING EXPERIENCE

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	<b>at University of Southern California</b>
2021 Spring	<b>Teaching Assistant</b> , AME-526, Introduction to mathematical methods in engineering II, <i>Prof. Niema Pahlevan</i>
2020 Fall	<b>Teaching Assistant</b> , AME-404, Computational Solutions to Engineering Problems, <i>Prof. Takahiro Sakai</i>

## GRADUATE COURSEWORK

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	<b>at University of Southern California</b>
2021	PHYS-516, Methods of Computational Physics, A , <i>Prof. Aiichiro Nakano</i> EE-556, Stochastic Systems and Reinforcement Learning, A , <i>Prof. Rahul Jain</i> CSCI-570, Analysis of Algorithms, B+ , <i>Prof. Victor Adamchik</i>
2020	AME-525, Engineering Analysis, A- , <i>Prof. Eva Kanso</i> AME-526, Introduction to Mathematical Methods in Engineering II, A , <i>Prof. Niema Pahlevan</i> AME-511, Compressible Gas Dynamics, A , <i>Prof. Iván Bermejo-Moreno</i> PHYS-760, Selected Topics in Computational Physics, P , <i>Prof. Satish Kumar Thittamaranahalli</i> AME-451, Linear Control Systems I, A , <i>Prof. Henryk Flashner</i> AME-541, Linear Control Systems II, A- , <i>Prof. Néstor O. Pérez-Arancibia</i> AME-535A, Introduction to Computational Fluid Mechanics, A , <i>Prof. Alejandra Uranga</i> AME-530A, Dynamics of Incompressible Fluids, B+ , <i>Prof. Carlos Pantano</i>

## HONOR/AWARDS

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2017-2018	Hui-Chun Chin and Tsung-Dao Lee Chinese Undergraduate Research Endowment of SJTU
2016	Honeywell Star Project <b>Second Place</b> , Parts of the National College Students Physics Competition <b>Third Place</b> , Chinese College Students' Mathematics Competition
2014	<b>First Place</b> , Chinese Chemistry Olympiad <b>First Place</b> , Shanghai Adolescents Science and Technology Innovation Contest

## ONLINE COURSEWORK

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	<b>at Coursera</b>
2021	Build a Modern Computer from First Principles: From Nand to Tetris (Project-Centered Course), Hebrew University of Jerusalem, <i>Prof. Shimon Schocken</i> and <i>Prof. Noam Nisan</i>
2019	<b>Specialization</b> , DeepLearning.AI TensorFlow Developer , DeepLearning.AI, <i>Prof. Andrew Ng</i> (containing 4 courses) <b>Specialization</b> , Deep Learning, DeepLearning.AI, <i>Prof. Andrew Ng</i> , <i>Prof. Kian Katanforoosh</i> , and <i>Prof. Kian Katanforoosh</i> (containing 5 courses) Machine Learning, Stanford University, <i>Prof. Andrew Ng</i>
2014	General Chemistry, Peking University, <i>Prof. Jiang Bian</i>