

Boyang Li

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PROFESSIONAL EXPERIENCE

Research Assistant Professor at the Department of Aeronautical and Aviation Engineering
The Hong Kong Polytechnic University, Hong Kong *Jul. 2020 - now*

Research Associate at the School of Engineering
The University of Edinburgh, UK *Jul. 2019 - Jun. 2020*

Research Fellow at Air Traffic Management Research Institute
Nanyang Technological University, Singapore *Jan. 2019 - Jun. 2019*

EDUCATION

PhD in Mechanical Engineering *Dec. 2018*
The Hong Kong Polytechnic University, Hong Kong
Thesis: *Model Predictive Hover Control and Transition Optimization for a Tail-Sitter Unmanned Aerial Vehicle*
Supervisor: Prof. Chih-Yung Wen

M.Eng. in Flight Vehicle Design *Apr. 2015*
School of Aeronautics, Northwestern Polytechnical University, China
Thesis: *Experimental Study of a High-Lift Mechanism for 3-DOF Flapping Wings*
Supervisor: Prof. Bifeng Song

B.Eng. in Flight Vehicle Design and Engineering *Jun. 2012*
Honors College, Northwestern Polytechnical University, China

PUBLICATIONS ([Google Scholar](#))

Journals

- [1] Y. Chu, C. Ho, Y. Lee, and **B. Li***, "Development of a Solar-Powered Unmanned Aerial Vehicle for Extended Flight Endurance," *Drones*, vol. 5, no. 2, 2021.
- [2] Y. Feng, K. Tse, S. Chen, C.Y. Wen, and **B. Li***, "Learning-Based Autonomous UAV System for Electrical and Mechanical (E&M) Device Inspection," *Sensors*, vol. 21, no. 4, p. 1385, Feb. 2021.
- [3] W. Zhou, S. Chen, C.W. Chang, C.Y. Wen, C.K. Chen, and **B. Li***, "System Identification and Control for a Tail-Sitter Unmanned Aerial Vehicle in the Cruise Flight," *IEEE Access*, vol. 8, pp. 218348-218359, 2020.
- [4] C. W. Chang, S. Chen, C.Y. Wen, and **B. Li***, "An Actuator Allocation Method for a Variable-Pitch Propeller System of Quadrotor-based UAVs," *Sensors*, vol. 20, no. 19, 2020.

- [5] Y. Cao, **B. Li**, Q. Li, A. A. Stokes, D. Ingram, and A. Kiprakis, "A Nonlinear Model Predictive Controller for Remotely Operated Underwater Vehicles with Disturbance Rejection," *IEEE Access*, vol. 8, pp. 158622-158634, 2020.
- [6] Q. Li, Y. Cao, **B. Li**, D. M. Ingram, and A. Kiprakis, "Numerical Modelling and Experimental Testing of the Hydrodynamic Characteristics for an Open-Frame Remotely Operated Vehicle," *Journal of Marine Science and Engineering*, vol. 8, no. 9, 2020.
- [7] **B. Li**, J. Sun, W. Zhou, C.Y. Wen, K.H. Low, and C.K. Chen, "An Optimal Transition Control Method for Tail-sitter VTOL UAVs," *IEEE/ASME Transactions on Mechatronics*, vol. 25, no. 5, pp. 2534-2545, 2020. [\[VIDEO\]](#)
- [8] J. Sun, **B. Li**, C.Y. Wen, and C.K. Chen, "Model-Aided Wind Estimation Method for a Tail-Sitter Aircraft," *IEEE Transactions on Aerospace and Electronic Systems*, vol. 56, no. 2, pp. 1262-1278, 2020.
- [9] W. Zhou, **B. Li**, J. Sun, C.Y. Wen, C.K. Chen, "Adaptive Model Predictive Control Method for a Tail-Sitter VTOL UAV", *Control Engineering Practice*, vol. 91, pp. 104-125, 2019.
- [10] J. Sun, **B. Li**, C.-Y. Wen, and C.-K. Chen, "Design and Implementation of a Real-time Hardware-in-the-loop Testing Platform for a Dual-rotor Tail-sitter Unmanned Aerial Vehicle," *Mechatronics*, vol. 56, pp. 1-15, 2018. [\[VIDEO\]](#)
- [11] **B. Li**, W. Zhou, J. Sun, C. Y. Wen, and C. K. Chen, "Development of Model Predictive Controller for a Tail-Sitter VTOL UAV in Hover Flight," *Sensors*, vol. 18, no. 9, 2018. [\[VIDEO\]](#)
- [12] J. Sun, **B. Li**, Y. Jiang, and C. Y. Wen, "A Camera-Based Target Detection and Positioning UAV System for Search and Rescue (SAR) Purposes," *Sensors*, vol. 16, no. 11, 2016. [\[VIDEO\]](#)
- [13] **B. Li**, Y. Jiang, J. Sun, L. Cai, and C. Y. Wen, "Development and Testing of a Two-UAV Communication Relay System," *Sensors*, vol. 16, no. 10, 2016. [\[VIDEO\]](#)

Conferences

- [1] C. Lim, **B. Li**, E. M. Ng, X. Liu and K. H. Low, "Three-dimensional Dynamic Obstacle Perception in a Detect-and-Avoid Framework for Unmanned Aerial Vehicles," *2019 International Conference on Unmanned Aircraft Systems (ICUAS)*, Atlanta, GA, USA, 2019. [\[VIDEO\]](#)
- [2] **B. Li**, W. Zhou, J. Sun, C. Y. Wen, and C. K. Chen, "Model Predictive Control for Path Tracking of a VTOL Tailsitter UAV in an HIL Simulation Environment," in *AIAA Modeling and Simulation Technologies Conference*, Kissimmee, FL, USA, 2018.
- [3] J. Sun, **B. Li**, L. Shen, C. K. Chen, and C. Y. Wen, "Dynamic Modeling and Hardware-In-Loop Simulation for a Tail-Sitter Unmanned Aerial Vehicle in Hovering Flight," in *AIAA Modeling and Simulation Technologies Conference*, Grapevine, TX, USA, 2017.
- [4] **B. Li**, B. Song; L. Wang, "A Three-dimensional Flapping Wing Mechanism for Wind Tunnel Experiments," in *29th Congress of the International Council of the Aeronautical Sciences (ICAS)*,

St. Petersburg, Russian, 2014. [[VIDEO](#)]

Patents

- Vertical take-off and landing miniature air vehicle with variable X-type wing, China Invention Patent, CN103979104A, 2014
- Three-dimensional flapping flapping-wing drive mechanism, China Invention Patent, CN104477383A, 2014
- Supporting mechanism of flapping wing model, China Invention Patent, CN104483095A, 2014
- Flight control navigation system for miniature ornithopter, China Invention Patent, CN202433775U, 2011

HONORS & AWARDS

- Gold Medal, 45th International Exhibition of Inventions of Geneva, Geneva, Switzerland, 2017
- Talent Development Scholarship, the Hong Kong SAR Government, Hong Kong, 2017
- Second Prize, Search and Rescue Group, Taiwan UAV Competition, Tainan, Taiwan, 2017
- First Prize, Search and Rescue Group, Taiwan UAV Competition, Tainan, Taiwan, 2016
- First Prize, Innovation Group, Taiwan UAV Competition, Tainan, Taiwan, 2016
- Third Prize, AVIC Cup - International UAV Innovation Grand Prix, Beijing, China, 2013
- Second Prize, Walking Robot Competition, China Robot Competition, Lanzhou, China, 2011
- First Prize, Dancing Robot Competition, China Robot Competition, Erdos, China, 2010

ACADEMIC ACTIVITIES

- Reviewer for *Green Tech Fund*, *Environmental Protection Department*, *HKSAR*.
- Reviewer for *IEEE Transactions on Mechatronics*, *Soft Computing*, *International Journal of Aeronautical & Space Sciences*, *Sensors*, *Journal of Intelligent and Robotic Systems*, *International Conference on Intelligent Robots and Systems (IROS)*, *International Conference on Robotics and Automation (ICRA)*, *Aerospace Science and Technology*, *IEEE Transactions on Wireless Communications*, *Journal of Communications and Networks*, *Applied Science*, *International Journal of Micro Air Vehicles*.