Jichao Li

National Key Laboratory of Aerodynamic Design and Research

Northwestern Polytechnical University, Xi'an, Shaanxi, 710072, China

Email: cfdljc@gmail.com Personal website: http://jichaoliaero.github.io

Education

Oct. 2016 - May 2018	Joint **Ph.D.** · Aerospace Engineering University of Michigan, Ann Arbor, USA Research Project: *Multi-fidelity Aerodynamic Shape Optimization*
Sep. 2013 - Mar. 2019	**Ph.D.** · Aerospace Engineering Northwestern Polytechnical University, Xi'an, China Thesis: *Aerodynamic Shape Optimization Methods with Discrete Adjoint and Data-driven Techniques*
Sep. 2009 - Jul. 2013	**B.E.** · Aircraft Design and Engineering Northwestern Polytechnical University, Xi'an, China

Research Interests

- Aircraft Design
- Multidiscipliary Design Optimization
- Aerodynamic Shape Optimization
- Adjoint Method
- Surrogate Model
- Reduced-order Model
- Machine Learning

Journal Papers

1. X. He, **Jichao Li**, C. A. Mader, A. Yildirim, and J. R. R. A. Martins (2019). Robust aerodynamic shape optimization—From a circle to an airfoil. *Aerospace Science and Technology*. doi:10.1016/j.ast.2019.01.051

2. **Jichao Li**, J. Cai, and K. Qu (2018). Surrogate-based Aerodynamic Shape Optimization with the Active Subspace Method. *Structural and Multidisciplinary Optimization*. doi:10.1007/s00158-018-2073-5

3. **Jichao Li**, M. A. Bouhlel, and J. R. A. A. Martins (2018). Data-based Approach for Fast Airfoil Analysis and Optimization. *AIAA Journal*. doi:10.2514/1.J057129

4. **Jichao Li**, J. Cai, and K. Qu (2018). Adjoint-Based Two-Step Optimization Method Using Proper Orthogonal Decomposition and Domain Decomposition. *AIAA Journal*. doi:10.2514/1.J055773

5. K. Qu, **Jichao Li**, and J. Cai (2015). Method of Linearizing Computational Fluid Dynamics Model and its Applications. *Acta Aeronautica et Astronautica Sinica* (*In Chinese*). doi:10.7527/S1000-6893.2015.0035

6. **Jichao Li**, S. He, and J. R. A. A. Martins (2019). Data-driven Constraint Approach to Ensure Low-speed Performance in Transonic Aerodynamic Shape Optimization. *Aerospace Science and Technology*. (Under review)

Conference Papers

1. **Jichao Li**, J. Cai, and K. Qu (2018). Drag Reduction of Transonic Wings with Surrogate-based Optimization. *2018 Asia-Pacific International Symposium on Aerospace Technology*. (In Press)
2. **Jichao Li**, M. A. Bouhlel, and J. R. A. A. Martins (2018). A Data-based Approach for Fast Airfoil Analysis and Optimization. *2018 AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference*. doi:10.2514/6.2018-1383
3. **Jichao Li**, K. Qu, J. Cai, and C. Cao (2016). Adjoint Approach based on Reduced-order Model for Steady PDE Systems. *17th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference*. doi:10.2514/6.2016-3668
4. C. Cao, J. Cai, K. Qu, and **Jichao Li** (2017). An Efficient Multistep ROM Method for Prediction of Flows over Airfoils. *55th AIAA Aerospace Sciences Meeting*. doi:10.2514/6.2017-1421

Research Experience

- Aircraft design through massively multi-point aerodynamic shape optimization to improve the cruise fuel efficiency
- A data-based airfoil analysis and optimization online tool — Webfoil
- Surrogate-based optimization with the active subspace method (ASM-SBO) to avoid the curse of dimensionality in aircraft design
- Development of the adjoint suite for a second-order finite-volume RANS CFD solver — Exstream
- A fast flow prediction solver through projection-based POD
- Parallelization of a hypersonic CFD solver with MPI

Awards & Honors

2018	Best Student Paper Award (Finalist), AIAA SciTech
2016	State Scholarship, China Scholarship Council
2013, 2014, 2015	Graduate Enrollment Scholarship (Grade 1) of NPU
2013	Honors College Graduate Student, NPU, China [*Top 5%*]
2012	3rd Prize in Contemporary Undergraduate Mathematical Contest of China
	1st Prize in the Electronic Experimental Skill Contest of NUP
2011	2rd Prize in the Physics and Chemistry Experimental Skill Contest of NUP
2010, 2011, 2012	Outstanding Student Scholarship (Grade 1) of NPU

Expertise & Skills

Languages	Mandarin Chinese, English.
Programming	Fortran, Python, C, Shell, LaTeX.
Tools	Linux, Matplotlib, Electron.

Referees

Joaquim R. R. A. Martins
Professor
Department of Aerospace Engineering
University of Michigan
Ann Arbor, MI 48109, USA
jrram@umich.edu

Jinsheng Cai
Professor
Department of Fluid Mechanics, School of Aeronautics
Northwestern Polytechnical University
Xi'an, Shaanxi 710072, China.
caijsh@nwpu.edu.cn