Wendong Huo

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Dalian City, Liaoning Province, 116000, China

Education

- **Dalian University of Technology** *2019.09 - 2025.06 (expected)*
  Ph.D. in Solid Mechanics Dalian, China
  - Thesis: Explicit Design and Optimization of Complex Surface Shell Structures.
  - Advisors: Prof. Xu Guo and Prof. Chang Liu

- **Hefei University of Technology** *2015.09 - 2019.06*
  B.E. in Engineering Mechanics Hefei, China
  - Thesis: Isogeometric Boundary Element Method for Steady Heat Conduction Problems.
  - Advisor: Prof. Bo Yu

Research Interests

- **Shell mechanics:** elasticity, wave motion, instability, metamaterial, etc.
- **Structure design:** size/shape/topology design, related mathematical programmings
- **Scientific ML:** creating novel tools and finding potential applications (please refer to the cover letter)

Publications

R=Under Review, J=Journal, *=corresponding authors, #=co-first authors

[R.1] Chang Liu, Yanbo Ren, Yilin Guo, **Wendong Huo***, Xu Guo*. (2025). **Hierarchical Shape Optimization for Complex Shell Structures**. Under Review at *Structural and Multidisciplinary Optimization*

[J.8] **Wendong Huo***, Chang Liu*, Yilin Guo, Zongliang Du, Weisheng Zhang, Xu Guo*. (2025). **Explicit Topography Design for Complex Shell Structures Based on Embedded Spline Components**. *Journal of the Mechanics of Physics of Solids*, Vol. 196, pp. 105974. DOI: 10.1016/j.jmps.2024.105974

[J.7] **Wendong Huo**, Chang Liu*, Yunpu Liu, Zongliang Du, Weisheng Zhang, Xu Guo*. (2023). **A Novel Explicit Design Method for Complex Thin-walled Structures Based on Embedded Solid Moving Morphable Components**. *Computer Methods in Applied Mechanics and Engineering*, Vol. 417, pp. 116431. DOI: 10.1016/j.cma.2023.116431

[J.6] **Wendong Huo**, Chang Liu*, Zongliang Du, Xudong Jiang, Zhenyu Liu, Xu Guo*. (2022). **Topology Optimization on Complex Surfaces Based on the Moving Morphable Component Method and Computational Conformal Mapping**. *ASME Journal of Applied Mechanics*, Vol. 89, pp. 051008. DOI: 10.1115/1.4053727

[J.5] Xudong Jiang, **Wendong Huo***, Chang Liu*, Zongliang Du, Xiaoyu Zhang, Xiao Li, Xu Guo*. (2022). **Explicit Layout Optimization of Complex Rib-reinforced Thin-walled Structures via Computational Conformal Mapping (CCM)**. *Computer Methods in Applied Mechanics and Engineering*, Vol. 404, pp. 115745. DOI: 10.1016/j.cma.2022.115745

[J.4] Mengcheng Huang#, **Wendong Huo#**, Chang Liu*, Dongsheng Yang, Jia Huang, Zongliang Du, Xu Guo*. (2021). **Substructuring Multi-resolution Topology Optimization with Template**. *Advances in Mechanics*, Vol. 51, pp. 901-909. DOI: 10.6052/1000-0992-21-030

[J.3] Zongliang Du, Wenyu Hao, Xiaodong Chen, Xiuquan Hou, **Wendong Huo**, Chang Liu, Weisheng Zhang, Tianchen Cui*, Xu Guo*. (2023). **Artificial Intelligence-enhanced Bioinspiration: Design of Optimized Mechanical Lattices Beyond Deep-sea Sponges**. *Extreme Mechanics Letters*, Vol. 62, pp. 102033. DOI: 10.1016/j.eml.2023.102033

[J.2] Xudong Jiang, Chang Liu*, Zongliang Du, **Wendong Huo**, Weisheng Zhang, Xiaoyu Zhang, Feng Liu, Xu Guo*. (2022). **A Unified Framework for Explicit Layout/Topology Optimization of Thin-walled Structures Based on Moving Morphable Components (MMC) Method and Adaptive Ground Structure Approach**. *Computer Methods in Applied Mechanics and Engineering*, Vol. 396, pp. 115047. DOI: 10.1016/j.cma.2022.115047

[J.1] Bo Yu, Geyong Cao, **Wendong Huo**, Huanlin Zhou, Elena Atroshchenko. (2021). **Isogeometric Dual Reciprocity Boundary Element Method for Solving Transient Heat Conduction Problems with Heat Sources**. *Journal of Computational and Applied Mathematics*, Vol. 385, pp. 113197. DOI: 10.1016/j.cam.2020.113197

Oral Presentations

C=conference

[C.7] Explicit Design of Complex Shell Structures Based on the Computational Conformal Mapping Technique and the Moving Morphable Component Approach, **ICTAM-26**, 2024.08.29, Daegu, Korea.

[C.6] Explicit Design Framework of Shell Structures Based on the Moving Morphable Component Method and the Dimensionality Reduction Mapping Technique, **ACSMO-5**, 2024.05.22, Zhengzhou, China.

[C.5] Explicit Designs of Complex Surface Structures Based on the MMC Method and Computational Conformal Mapping, **ICASD-1**, 2023.09.15, Xi'an, China.

[C.4] Topology Optimization on Complex Surfaces Based on the Moving Morphable Component Method and Computational Conformal Mapping, **WCSMO-15**, 2024.08.29, Cork, Ireland.

[C.3] Explicit Design Software for Complex Thin-walled Structures, the 1st Contest on Open-source Industrial Software Integration, 2023.02.24, Virtual.

[C.2] Explicit Topology Optimization for Complex Thin-walled Structures Based on the Moving Morphable Component Method and Computational Conformal Mapping Technique, the 3rd Doctoral Academic Forum of the Chinese Society of Theoretical and Applied Mechanics, 2023.01.07, Virtual.

[C.1] Topology Optimization on Complex Surfaces Based on the Moving Morphable Component Method and Computational Conformal Mapping, **ACSMO-4**, 2022.05.24, Virtual.

Honors and Awards

- **National Scholarship** *2018.09*
  Ministry of Education, China
- **Golden Prize, "Challenge Cup" Entrepreneurship Competition** *2024.11*
  Department of Science and Technology of Liaoning Province
- **Special Prize, International Engineering Mechanics Contest** *2019.01*
  Organizing Committee of International Engineering Mechanics Contest
  ◦ Team pursuit and ranked 2nd out of 104 teams in the Asian Region
- **Special Prize, Chinese Mechanics Competition, Anhui Province Site** *2017.06*
  Anhui Society of Theoretical and Applied Mechanics
- **1st Prize, "EBSCO Cup" Literature Information Acquisition Competition** *2018.11*
  EBSCO Information Services
- **2nd Prize, Open-source Industrial Software Integration Competition** *2023.04*
  Organizing Committee of Software Integration Competition, OpenAtom Fundation
- **2nd Prize, International Engineering Mechanics Contest** *2019.01*
  Organizing Committee of International Engineering Mechanics Contest
  ◦ Individual pursuit
- **3rd Prize, Chinese Mechanics Competition in Honor of Zhou Peiyuan** *2017.06*
  Chinese Society of Theoretical and Applied Mechanics, Zhou Peiyuan Foundation

SKILLS

- **CAD:** SpaceClaim, Siemens NX (UG), AutoCAD
- **CAE:** Abaqus, Ansys, Hyperworks, Fenics, Comsol
- **CG:** MeshLab, Blender, UE5, KeyShot
- **Numerical Methods:** Finite Element Method, Boundary Element Method, Isogeometric Analysis
- **Coding:** Python (rpy), Matlab, Fortran, C, C#, JavaScript, LaTeX, Qt
- **Toolkits:** trimesh, geomdl, pyvista, cg3lib, BFF, igl
- **Misc.:** Office, Visio, Origin