Fang Han

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EDUCATION

- **Ph.D. in Engineering Mechanics** 09/2009–07/2013
  State Key Laboratory of Structural Analysis for Industrial Equipment, Dalian University of Technology, China.
  Dissertation: Research on dynamics problem of blade-rotor system and parameters identification method.

- **M.S.E. in Engineering Mechanics** 09/2007–07/2009
  College of Sciences, Northeastern University, Shenyang, China.
  Dissertation: Research on some dynamic characteristics of complex rotor system.

- **B.S.E. in Engineering Mechanics** 09/2003–07/2007
  College of Sciences, Northeastern University, Shenyang, China.
  Dissertation: Sub-structure transfer matrix method of dual-rotor system analysis.

WORKING EXPERIENCES

R&D Staff
Environmental Sciences Division 08/2019–present

- Support Standard Modular Hydropower project. Lead modular technology R&D.
- Lead Advanced Manufacturing for Hydropower Roadmap Report Development.
- Support Digital Twin Development in Hydropower.

Senior Dynamic System Analysis Engineer 05/2018–07/2019
Agriculture and Turf Division, John Deere, Waterloo, IA

- Lead the torsion vibration analysis project of the full tractor. Analyzed the torsion vibration of the whole tractor in transmission operating range/mode by using Amesim, Matlab, Python and Cero, and provide complex design, develop and modifications of solutions.
- Hydraulic system analysis of electrical infinitely variable transmission by using Amesim, Matlab, Python and Cero, and provide design and modification of solutions to the customers.

RESEARCH EXPERIENCES

Adjunct Instructor 08/2016–01/2017
School of Mechanical and Materials Engineering, Washington State University Tri-Cities, Richland, WA

- Instructed Finite Elements class for graduate students, including the theory of Finite Element Method and its applications in structural vibration and dynamics, thermal analysis, fluid analysis and training of simulation software packages, such as Solidworks, ANSYS Workbench and Matlab.

Post Doctorate Research Associate 01/2014–08/2017
School of Mechanical and Materials Engineering, Washington State University Tri-Cities, Richland, WA

- Developed a surrogate model used in wind turbine system by using Matlab.
- Established a novel identification method based on kriging surrogate model and evolution algorithm to increase the efficiency of operation and computation in complex rotor system by using Matlab.
- Wrote and submitted a proposal about the energy optimization of wind turbine system to NSF.

Research Assistant 09/2009–07/2013

State Key Laboratory of Structural Analysis for Industrial Equipment, Dalian University of Technology, Dalian, China

- Established the ball grid array model which used in electronic equipment by using Solidworks and did the steady state and transient thermal analysis by using ANSYS Workbench.
- Investigated the effect of blade mistuning of the blade-disk system and optimized the blade distribution to reduce the blades fatigue and increase the blades life with differential evolution algorithm by using Matlab.
- Analyzed the structural of the vehicle gearbox transmission system by using ANSYS and Solidworks.

Research Assistant 09/2006–07/2009

College of Sciences, Northeastern University, Shenyang, China

- Developed the transfer matrix-modal synthesis method to reduce the dimension of axial-flow compressor in gas turbine engine by using C++.
- Analyzed linear and nonlinear dynamic characteristics of multi-disk rotor system in the gas turbine engine under different conditions, such as in steady-state rotor temperature range by using C++.

PUBLICATIONS

[1] Fang Han*, Changki Mo, Haiyang Gao. An Adaptive Hybrid Differential Evolution Algorithm for Dynamic Parameters Identification of Rotating Machinery. ***Journal of Vibration and Control, Accepted***.

[2] Fang Han*, Xinglin Guo, Changki Mo, et al.. Parameter Identification of Nonlinear Rotor-bearing System Based on Improved Kriging Surrogate Model. ***Journal Vibration and Control, 2017, 23(5): 794-807***.

[3] Fang Han, XinglinGuo*, HaiyangGao. Bearing Parameter Identification of Rotor-Bearing System Based on Kriging Surrogate Model and Evolutionary Algorithm. ***Journal of Sound and Vibration, 2013, 32: 2659-2671***.

[4] Fang Han, XinglinGuo*, HaiyangGao. Parameter Identification of Nonlinear Rotor System Based on Hybrid Intelligent Algorithm. ***Journal of Vibration and Shock, 2012, 31(17):111-115.***

[5] Fang Han, XinglinGuo*, HaiyangGao. Research on Coupled Bending and Torsion Vibration of Blade-Rotor-Bearing System with Nonlinear Oil-Film Force. ***Engineering Mechanics, 2013, 30(4):355-359.***

[6] Haiyang, Gao*, Xiaofei Hu, Fang Han, et al.. Experimental Study of Crack Identification in Plate Structure Based on a Kriging Surrogate Model. ***Journal of Mechanical Engineering Science, 2017, 231(17): 3118-3129.***

[7] Haiyang Gao, Xinglin Guo*, Huajiang Ouyang, Fang Han. Crack Identification of Cantilever Plates Based on Kriging Surrogate Model. ***ASME Journal of Vibration and Acoustics, 2013, 135(5):1-10.***