Yaolei Shen

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Research field: Robot Dynamic and Control, Unmanned Aerial Vehicle

EDUCATION:

09/19-present **Northwestern Polytechnical University** **Master in Mechanical Engineering (GPA: 3.63/5.00)** Xi'an, China
09/15-06/19 **Northwestern Polytechnical University** **Bachelor in Mechanical Engineering (Ranking: 5/86)** Xi'an, China

PROJECTS:

11/20-present **Northwestern Polytechnical University (School of Mechanical Engineering)** Xi'an, China
Modeling and control for a bird-scale flapping-wing aerial vehicle (Master's Project)

- Multi-body dynamic modeling for the vehicle
- Quasi-steady aerodynamic modeling
- Design of path tracking strategy and vehicle attitude controller

07/18-06/20 **Northwestern Polytechnical University (School of Aeronautics)** Xi'an, China
Seagull inspired flapping-wing aerial vehicle (National Key Research and Development Program, participator)

- Design of the bio-inspired flapping-wing mechanism
- Production of the vehicle prototype
- Design and production of the rotary experiment platform

11/20-12/20 **Chang'an University (School of Construction Machinery)** Xi'an, China
Autonomous docking system of rotorcraft (project participator)

- Control law design of rotorcraft
- Vehicle crash analysis at controlled condition

05/16-06/18 **Northwestern Polytechnical University (School of Mechanical Engineering)** Xi'an, China
Design of locust inspired jumping robot (National Innovation Training Program for College Students, team leader)

- Design of the bio-inspired jumping mechanism
- Robot jumping process modeling
- Production of the robot prototype

PUBLICATIONS:

Journals:

Y. Shen, W. Ge, P. Miao. "Multibody-dynamic Modeling and Stability Analysis for a Bird-scale Flapping-wing Aerial Vehicle," *Journal of Intelligent and Robotic Systems*, 2021, **103**(1).
X. Mo, W. Ge, D. Zhao, **Y. Shen**. " Path and function synthesis of multi-bar mechanisms using beetle antennae search algorithm," *Filomat*, 2021, **34**(15), pp. 5215-5233.

Conferences:

Y. Shen, W. Ge, X. Mo et al. "Design of a locust-inspired miniature jumping robot," *2018 IEEE International Conference on Robotics and Biomimetics (ROBIO)*, Kuala Lumpur, Malaysia, 2018, pp. 2322-2327.

Patents:

W. Ge, X. Mo, **Y. Shen** et al. "Seagull inspired flapping-wing mechanism,"CN109693788A (2019). (in Chinese)

SKILLS:

Programming skills:	Matlab/Simulink, C language (Microcontroller Programming)
Design skills:	CAD software, CAE software (ADAMS), optimization algorithm (gradient-based, swarm intelligence)
Control theory:	Classical/Modern control theory, dynamic modeling, nonlinear control
Planning methods:	Sampling-based motion/trajectory plan, MPC control
Practical ability:	Familiar with the design of robot prototypes

FUNDING & AWARDS:

2020, First-class academic scholarship of Northwestern Polytechnical University
2018, Excellent conclusion of National Innovation Training Program for College Students of China
2018, First-class academic scholarship of Northwestern Polytechnical University
2017, First-class academic scholarship of School of Mechanical Engineering, Northwestern Polytechnical University