**Yun Liu**

**Department of Mechanical and Civil Engineering Purdue University Northwest**

**1401 US-421, Westville, IN46391**

**Email:** **liu739@pnw.edu** **Phone: 1+219-785-5381**

**Professional Experience**

08/2017 – Present **Assistant Professor,** Purdue University Northwest

08/2016 – 07/2017 **Post-Doc Associate,** Saint Anthony Falls Lab, University of Minnesota

01/2016 – 05/2016 **Guest Instructor,** Purdue University, ME309 – Fluid Mechanics

08/2014 – 12/2015 **Teaching Assistant,** Purdue University, ME309 – Fluid Mechanics

08/2011 – 05/2016 **Research Assistant,** Purdue University, Bio-Robotics Lab

06/2008 - 06/2011 **Research Assistant,** USTC, Yang’s Aerodynamics Lab

**Education**

**Ph.D**. in Mechanical Engineering **Purdue University, West Lafayette** 2016

**M.S**. in Mechanical Engineering **University of Science and Technology of China** 2011

**B.S**. in Mechanical Engineering **University of Science and Technology of China** 2008

**Research Interests**

Bio-fluid mechanics, renewable energy, three-dimensional flow measurement/visualization, optical flow diagnostics, multiphase flow.

**Awards/Grants**

*2020* *Proposal Submission Grant* ($4500), Purdue University Northwest.

*2019* *NSF-Major Research Instrument Grant* ($363,000, PI)

*2019* *Honorable Mention for Best Design Award*, Global Space Balloon Challenge. (Club Supervisor)

*2019* *Exploratory Grant* ($4000), Purdue University Northwest.

*2019* *SoE Summer Faculty Internship Award*

*2018* *Catalyst Grant Award* ($7000), Purdue University Northwest.

*2016* *Estus H. and Vashti L. Magoon Award*, Purdue University West Lafayette

*2015* *Lambert Graduate Teaching Fellowship*, Purdue University West Lafayette

*2015* *Graduate Student Summer Research Grant*, Purdue University West Lafayette

*2007* *Excellent Award on 6th National Zhoupei Yuan Competition on mechanics,* China.

*2005, 2006, 2007* *Excellent Undergraduate Scholarship****,*** College of Engineering, USTC.

**Course Taught**

Fluid Mechanics (2016 Spring, 2017 Fall, 2018 Spring, 2018 Fall, 2019 Fall),

Mass and Heat Transfer (2017 Fall),

Thermodynamics II (2017 Fall),

Solar Engineering System (2018 Spring, 2019 Spring),

Senior Design Experience (2018 Spring, 2019 Spring, 2019 Fall)

**Publication**

**Journal Paper**

1. Z Cai, **Y Liu**, T Chen, T Liu. Variational method for determining pressure from velocity in two dimensions. *Under revision*
2. S Shao, A Balakrishna, K Yoon, J Li, **Y Liu**, J Hong. Effect of mounting strut and cavitator shape on ventilation demand for ventilated supercavitation. *Under revision*
3. **Y. Liu**, B Li, D Zhou, Y Zhang. Unsteady aerodynamics dominates the force production on hovering insects. *To be submitted*
4. J Roll, **Y Liu**, S Sane, X Deng. Steadiness in unsteady flows: flapping wing aerodynamics in turbulence. *To be submitted*
5. Y Wu, **Y Liu**, S Shao, J Hong. On the internal flow of a ventilated supercavity. *J. Fluid Mechanics,*862, 1135-1165, 2019
6. A Balakrishna, S Shao, **Y Liu**, J Hong. Effect of Cavitator Geometry on the Ventilation Demand to Form and Sustain a Ventilated Supercavity. arXiv preprint arXiv:1903.10021. 2019
7. T Dasari, W Yu, **Y Liu**, J Hong. Near-wake behavior of a utility-scale wind turbine. *J. Fluid Mechanics*859, 204-2462019
8. M Heisel, T Dasari, **Y Liu,** J Hong, F Coletti, M Guiala. The spatial structure of the logarithmic region in very-high-Re rough wall turbulent boundary layers. *J. Fluid Mechanics****,*** 857, 704-7472018
9. B Li, L Wang, **Y Liu**, J Liu. Drag distribution of non-uniform building from surface pressure measurements in wind tunnel. *Building and Environment.* 143, 618-631, 2018
10. **Y Liu**, J Roll, S.M. Van Kootan, X Deng. Schlieren photography on freely flying hawkmoth. *Biology letters*14(5)*,* 2018
11. **Y Liu**, B Cheng, S P. Sane, X Deng. Aerodynamics of dynamic wing deflection in translating wings. *Experiments in Fluids 56:131,*2015
12. B Cheng, J Roll, **Y Liu**, DR Troolin, X Deng. Three-dimensional vortex wake structure of flapping wings in hovering flight. *Journal of the Royal Society Interface* 11 (91), 20130984, 2014
13. **Y Liu**, B Cheng, X Deng. An application of smoke-wire visualization on a hovering insect wing. *Journal of Visualization*, 16(3), 185-187, 2013
14. **Y Liu**, B Cheng, G Barbera, DR Troolin, X Deng. Volumetric Visualization of the near - and far - field wake in flapping wings. *Bioinspiration & Biomimetics*, 8 036010, 2013
15. N Hao, **Y Liu**, J Wang, WC Yang, JM Yang. Low speed wind tunnel experiments on an oblique wing*. Acta Aerodynamica Sinica.*3, 2013
16. **Y Liu**, WC Yang, JM Yang. A visualization study of the near-wall behaviors of an oblique plate at different angles of attack. *Journal of visualization* 14 (2), 141-148, 2011

**Conference Paper/Abstract**

1. **Y Liu**, Measurement of starting vortex strength of a hovering hawkmoth. Bulletin of the American Physical Society 2019
2. D Galarza, **Y Liu**. High speed Schlieren photography on small insects. Bulletin of the American Physical Society 2019
3. **Y Liu**, J Roll, S Van Kooten, X Deng. Schlieren photography to study the flow around flying insects. INTEGRATIVE AND COMPARATIVE BIOLOGY 59, E138-E138. 2019
4. **Y Liu**, J Roll, X Deng. High speed Schlieren photography on flying insects. Bulletin of the American Physical Society 63. 2018
5. Y Wu, **Y Liu**, S Shao,J Hong. Probe into internal flow structures of a ventilated supercavity. *10th International Cavitation Symposium* (2018)
6. **Y Liu**, J Roll, X Deng. High-Speed Schlieren Photography on flying insects. *Bulletin of the American Physical Society* (2018).
7. M Heisel, **Y Liu**, T Dasari, A Petersen, J Hong, F Coletti, M Guala. Characterization of turbulent flow structures in the atmospheric boundary layer through super-large-scale particle image velocimetry. *Bulletin of the American Physical Society* (2017).
8. J Hong, T Dasari, Y Wu, **Y Liu**. Velocity field and coherent structures in the near wake of a utility-scale wind turbine. *Bulletin of the American Physical Society* (2017).
9. **Y Liu**, T Dasari, J Hong. Flow Visualization on a Utility-Scale Wind Turbine Using Natural Snowfalls (Gallery of Fluid Motion). 69th APS-DFD Annual meeting, Nov 20-22, 2016, Portland, Oregon.
10. **Y Liu**, S VanKooten, X Deng. High speed Schlieren photography on a free flying hawmoth (Gallery of Fluid Motion). 68th APS-DFD Annual meeting, Nov 22-24, 2015, Boston, Massachusetts.
11. **Y Liu**, B Cheng, X Deng. An Experimental Study of Dynamic Trailing Edge Deflections on a Two Dimensional Translating Wing. 31st AIAA Applied Aerodynamics Conference. June 24-27,2013, San Diego, California, AIAA 2013-2816
12. **Y Liu**, B Cheng, X Deng. Volumetric visualization of the near and far field wake in flapping wings. *Bulletin of the American Physical Society* (2013).
13. B Cheng, **Y Liu**, X Deng. Three dimensional vortex wake structure of flapping wings in hovering flight. *Bulletin of the American Physical Society* (2013).
14. **Y Liu**, Jiming Yang, Wenchao Yang. Visualization study of a low speed oblique plate. 8th National Symposium on flow visualization. July,2010 Xiamen, China

**Activities & Service**

Member: *American Physical Society* (**APS**), *Society for Integrative and Comparative Biology* (**SICB**)

Reviewer: *Physics of Fluid, Heat Transfer Engineering, International Journal of Multiphase Flow, Journal of Hydrodynamics, International Journal of Micro Air Vehicle.*

Committee: *MCE Department Head Search Committee*, *SoE* *Doctor of Engineering Committee, SoE workload Committee, MCE Department Undergraduate Program Committee.*

Student club mentor: *PNW Aerosolar Engineering Club*