ILLINOIS
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Curriculum Vitae (Spring 2019)

CONTACT INFORMATION

- **Name**: Jinhui Yan
- **Current Position**: Assistant Professor, University of Illinois at Urbana-Champaign
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- **Address**: Newmark 2106, 205 N Mathews Ave, Urbana, IL 61801
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RESEARCH INTERESTS

Fluid-Structure Interaction, Isogeometric and Finite Element Analysis, Computational Thermal Multi-phase Flows *and* Their Applications to **Renewable Energy (Wind and Tidal)**, **Ocean Engineering**, **Structural Engineering** and **Additive Manufacturing**

APPOINTMENTS

Assistant Professor 2018-Present
Department of Civil and Environmental Engineering
Graduate Program of Computational Science and Engineering
Advanced Digital Sciences Center in Singapore (Adjunt)
University of Illinois, Urbana–Champaign

Postdoctoral Research Fellow 2016-2018
Department of Mechanical Engineering, Northwestern University

Research Assistant 2012-2016
Department of Structural Engineering, University of California, San Diego

EDUCATION

Ph.D. Structural Engineering/Computational Sciences 2012-2016
University of California, San Diego, USA

M.S. Engineering Mechanics 2009-2012
Peking University, China

B.S. Mechanical Engineering 2005-2009
Wuhan University, China

ACADEMIC AWARDS

- ASME Robert M. and Mary Haythornthwaite Young Investigator Award 2018
- World Congress for Computational Mechanics Travel Award 2018
- Nomination for UCSD Chancellor Dissertation Medal 2017
- Chinese Government Award for Outstanding Self-financed Students Abroad 2016
- Charles Lee Powell Fellowship, University of California, San Diego 2012-2013
- Cambridge International Fellowship, University of Cambridge (declined) 2012-2016
- Presidential Fellowship (highest honor), Peking University 2009-2011
- National Scholarship, Ministry of Education of China 2008
- First Class Scholarship, Wuhan University 2008
- First Prize in National Smart Car Contest of China, Ministry of Education of China 2008
- Outstanding Student Leader Award, Wuhan University 2008
- Outstanding Student Award, Wuhan University 2005-2009

JOURNAL PAPERS

32. S. Lin, Z. Gan, **J. Yan**, G. Wangner, " A conservative level set method on unstructured meshes for modeling multiphase thermo-fluid flow in additive manufacturing processes", *Computer Method in Applied Mechanics and Engineering*, submitted (2020).

31. Z. Zhao, **J. Yan** " Variational multi-scale modeling of interfacial flows with a balanced-force surface tension model", *Mechanics Research Communication*, submitted (2020).

30. J. Gao, M. Xiao, L. Gao, **J. Yan**, W. Yan," Isogeometric topology optimization for computational design of re-entrant and chiral auxetic composites", *Computer Method in Applied Mechanics and Engineering*, https://doi.org/10.1016/j.cma.2020.112876, (2020).

29. **J. Yan**, X. Deng, F. Xu, S. Xu, Q. Zhu "Numerical simulations of two back-to-back horizontal axis tidal stream turbines in free-surface flows", *Journal of Applied Mechanics*, https://doi.org/10.1115/1.4046317 (2020).

28. Q. Zhu, F. Xu, S. Xu, M. Hsu, **J. Yan**," An immersogeometric formulation for free-surface flows with application to marine engineering problems", *Computer Method in Applied Mechanics and Engineering*, DOI:10.1016/j.cma.2019.112748, (2019).

27. Q. Zhu, **J. Yan**,"A moving-domain CFD solver in FEniCS with applications to tidal turbine simulations in turbulent flows", *Computers and Mathematics with Applications*, DOI: j.camwa.2019.07.034

26. S. Xu, N. Liu, **J. Yan**, "Residual-based variational multi-scale modeling for particle-laden gravity currents over flat and triangular wavy terrains", *Computers and Fluids*, DOI: j.compfluid.2019.05.008 (2019).

25. T. Helgedagsrud, Y. Bazilevs, K. Mathisen, **J. Yan**, O. Øiseth, " Modeling and simulation of bridge-section buffeting response in turbulent flow", *Mathematical Models and Methods in Applied Science*, DOI: 10.1142/S0218202519410045 (2019).

24. S. Lin, **J. Yan**, D. Kats, G. Wagner, "A Volume-conserving level set method on unstructured meshes using a control volume finite element formulation", *Journal of Computational Physics*, (2018). DOI: 10.1016/j.jcp.2018.11.032

23. K. Li, Y.Shao, Z. Lu, H. Yan, Z. Lu, K.J. Griffith, **J. Yan**, G. Wang, H. Fan, J. Lu, W. Huang, B. Bao, X. Liu, C. Hou, Q. Zhang, Y. Li, J. Y, H. Wang, "Lattice contraction triggered synchronous electrochromic actuator", *Nature communication*, (2018). DOI: 10.1038/s41467-018-0724

22. Y. Bazilevs, **J. Yan**, A. Korobenko, X. Deng, "Computer modeling of wind turbines: 2. Freesurface FSI and fatigue-damage", *Archives of Computational Methods in Engineering*, (2018). DOI: https://doi.org/10.1007/s11831-018-9287-y.

21. **J. Yan**, W. Yan, S. Lin, G. Wagner, "A fully coupled finite element formulation for liquid-solid-gas thermo-fluid flow with melting and solidification", *Computer Methods in Applied Mechanics and Engineering*, (2018). DOI: 10.1016/j.cma.2018.03.017

20. W. Yan, S. Lin, O. Kafka, Y. Lian, C. Yu, Z. Liu, **J. Yan**, S. Wolff, E. Ndip-Agbora, M. Mozaara, K. Ehmann, J. Cao, G. Wagner, W. Liu, "Data-driven multi-scale multi-physics models to derive process-structure-property relationships for additive manufacturing", *Computational Mechanics*, (2018). DOI: 10.1007/s00466-018-1539-z

19. R. Li, K. Li, G. Wang, L. Li, Q. Zhang, **J. Yan**, Y. Chen, Q. Zhang, C. Hou, Y. Li, H. Wang, "Ion-Transport Design for High-Performance Na+-based Electrochromics", *ASC Nano*,(2018). DOI: 10.1021/acsnano.8b00974

18. **J. Yan**, S. Lin, Y. Bazilevs, G. Wagner, "Isogeometric analysis of multi-phase flows with surface tension and its application on bubble dynamics", *Computers and Fluids*, (2018). DOI: 10.1016/j.compfluid.2018.04.017.

17. D. Kamensky, F. Xu, C. Lee, **J. Yan**, Y. Bazilevs, M. Hsu, "A contact formulation based on a volumetric potential: Application to isogeometric simulations of atrioventricular valves", *Computer Methods in Applied Mechanics and Engineering*, (2017). DOI: 10.1016/j.cma.2017.11.007

16. A. Korobenko, **J. Yan**, S. Gohari, S. Sarkar, Y. Bazilevs, "FSI simulation of two back-to-back wind turbines in atmospheric boundary layer flow", *Computers and Fluids*, (2017). DOI: 10.1016/j.compfluid.2017.05.010

15. **J. Yan**, X. Deng, A. Korobenko, Y. Bazilevs, "Free-surface flow modeling and simulation of horizontal-axis tidal-stream turbines", *Computers and Fluids*, (2016). DOI: 10.1016/j.compfluid.2016.06.016. The visualization of this work got a prize from Tecplot (Link)

14. **J. Yan**, A. Korobenko, AE Tejada-Martínez, R. Golshan, Y. Bazilevs "A new variational multiscale formulation for stratified incompressible turbulent flows", *Computers and Fluids*, (2016). DOI: 10.1016/j.compfluid.2016.12.004

13. T. Opstal, **J. Yan**, C. Coley, J. Evans, T. Kvamsdal, Y. Bazilevs, "Isogeometric divergence-conforming variational multiscale formulation of incompressible turbulent flows", *Computer Methods in Applied Mechanics and Engineering*, (2016). DOI: 10.1016/j.cma.2016.10.015.

12. **J. Yan**, A. Korobenko, X. Deng, Y. Bazilevs, "Computational free-surface fluid-structure interaction with application to floating offshore wind turbines", *Computers and Fluids*, (2016). DOI: 10.1016/j.compfluid.2016.03.008.

11. Y. Bazilevs, X. Deng, A. Korobenko, **J. Yan**, "Fluid-structure interaction modeling for fatigue-damage prediction in full-scale wind turbine blades", *Journal of Applied Mechanics*, (2016). DOI: 10.1115/1.4030795.

10. X. Deng, J. Wang, **J. Yan**, T. Liu, S. Wang, "Topology optimization of total femur structure: application of parameterized level set method under geometric constraints", *Journal of Mechanical Design*, (2016). DOI: 10.1115/1.4031803.

9. **J. Yan**, B. Augier, A. Korobenko, J. Czarnowski, G. Keterman, Y. Bazilevs, "FSI modeling of a propulsion system based on compliant hydrofoils in a tandem configuration", *Computers and Fluids*, (2016). DOI: 10.1016/j.compfluid.2015.07.013.

8. Y. Bazilevs, A. Korobenko, **J. Yan**, A. Pal, S. Gohari, S. Sarkar, "ALE-VMS formulation for stratified turbulent incompressible flows with applications", *Mathematical Models and Methods in Applied Science*, (2015). DOI: 10.1142/S0218202515400114.

7. Y. Wang, Q. Wang, X. Deng, Z. Xia, **J. Yan**, H. Xu, "Graphics processing unit (GPU) accelerated fast multipole BEM with level-skip M2L for 3D elasticity problems", *Advances in Engineering Software*, (2015). DOI:110.1016/j.advengsoft.2015.01.002.

6. B. Augier, **J. Yan**, A. Korobenko, J. Czarnowski, G. Ketterman, Y. Bazilevs, "Experimental and numerical FSI study of compliant hydrofoils", *Computational Mechanics*, (2014). DOI: 10.1007/s00466-014-1090-5.

5. Y. Bazilevs, **J. Yan**, M. Stadler, S. Sarkar, "Computation of the flow over a sphere at Re = 3700: a comparison of uniform and turbulent inflow conditions", *Journal of Applied Mechanics*, (2014). DOI: 10.1115/1.4028754.

4. X. Deng, A. Korobenko, **J. Yan**, Y. Bazilevs, "Isogeometric analysis of continuum damage in rotation-free composite shells", *Computer Methods in Applied Mechanics and Engineering*, (2014). DOI: 10.1016j.cma.2014.09.015

3. Y. Bazilevs, A. Korobenko, X. Deng, **J. Yan**, M. Kinzel, J. Dabiri, "FSI modeling of vertical-axis wind turbines", *Journal of Applied Mechanics*, (2014). DOI:10.1115/1.4027466.

2. Y. Bazilevs, A. Korobenko, X. Deng, **J. Yan**, "Novel structural modeling and mesh moving techniques for advanced FSI simulation of wind turbines", *International Journal for Numerical Methods in Engineering*, (2014). DOI: 10.1002nme.4738.

1. J. Liu, **J. Yan**, S. Lo, "A new insertion sequence for incremental Delaunay triangulation", *Acta Mechanica Sinica*, (2013). DOI: s10409-013-0001-x.

INVITED SEMINARS

16. **J. Yan**, "Computational multi-phase flow: method development and applications, *Center for Advanced Study in Theoretical Sciences*, **National Taiwan University**, Taipei, December 20, 2019.

15. **J. Yan**, "Computational multi-phase flow: method development and applications, *Department of Mechanical Engineering*, **National University of Singapore**, Singapore, December 16, 2019.

14. **J. Yan**, "Computational fluid-structure interaction for wind and tidal energy, *Department of Civil Engineering*, **The University of Utah**, Salt Lake City, November 12, 2019.

13. **J. Yan**, "Isogeometric thermal multi-phase flows with applications to metal additive manufacturing", *Department of Mechanical Engineering*, **Iowa State University**, Ames, October 24, 2019.

12. **J. Yan**, "Advanced FSI for Renewable Energies", *School of Mechanics and Aerospace Engineering*, **Southern University of Science and Technology**, Shenzhen, Janurary 6, 2019.

11. **J. Yan**, "Isogeometric multi-scale multi-physics analysis platform", *School of Power and Mechanical Engineering*, **Wuhan University**, Wuhan, April 22, 2018.

10. **J. Yan**, "Computational multi-phase fluid-structure interaction with applications to wind and tidal energy", *College of Water Resources and Hydroelectric Engineering*, **Wuhan University**, Wuhan, April 21, 2018.

9. **J. Yan**, "Computational multi-phase fluid-structure interaction with applications to wind and tidal energy", *Department of Civil, Environmental, and Construction Engineering*, **Texas Tech University**, Lubbock, March 23, 2018 (declined).

8. **J. Yan**, "Computational multi-phase fluid-structure interaction with applications to wind and tidal energy", *Department of Mechanics and Engineering Sciences*, **Peking University**, Beijing, March 17, 2018.

7. **J. Yan**, "Computational multi-phase fluid-structure interaction with applications to wind and tidal energy", *Department of Civil and Environmental Engineering*, **University of Iowa**, Iowa City, February 9, 2018.

6. **J. Yan**, "Computational multi-phase fluid-structure interaction with applications to wind and tidal energy", *Department of Civil and Environmental Engineering*, **University of Illinois at Urbana-Champaign**, Champaign, January 21, 2018.

5. **J. Yan**, "A novel computational formulation for thermal multi-phase flows: from bubble dynamics to additive manufacturing", *Department of Civil Engineering*, **University of Hong Kong**, Hong Kong, October 18, 2017.

4. **J. Yan**, "Isogeometric multi-phase fluid structure interaction with applications to offshore renewable energy", *Department of Civil Engineering*, **University of Texas at Arlington**, Arlington, April 17, 2017.

3. **J. Yan**, "Isogeometric multi-phase fluid structure interaction with applications to offshore renewable energy", *Department of Civil Engineering and Engineering Mechanics*, **Columbia University**, New York, April 7, 2017.

2. **J. Yan**, "Isogeometric multi-phase fluid structure interaction with applications to energy systems", *Department of Biomedical Engineering and Mechanics*, **Virginia Tech**, Blacksburg, February 21, 2017.

1. **J. Yan**, "Advanced computational free-surface fluid-structure interaction for marine engineering", *Department of Mechanical Engineering*, **University of British Columbia**, Vancouver, June 3, 2016.

CONFERENCE PROCEEDINGS AND PRESENTATIONS

21. Asian Pacific Congress on Computational Mechanics, Taipei, 12/18-12/21, 2019.

20. ASME's International Mechanical Engineering Congress and Exposition, Salt Lake City, USA, 2019.

19. Society of Engineering Science-56th Annual Technical Meeting, Washington University in St. Louis, USA, 2019.

18. 15th U.S. National Congress on Computational Mechanics, Austin, USA, 2019.

17. Advances in Computational Fluid-Structure Interaction and Flow Simulation, Okinawa, Japan, 2019.

16. Applied Energy Symposium and Summit, MIT, USA, 2019.

15. Finite Elements for Fluids, Chicago, USA, 2019.

14. Workshop on Meshfree Method and Advances in Computational Mechanics, Pleasanton, USA, 2019.

13. ASME's International Mechanical Engineering Congress and Exposition, Pittsburgh, USA, 2018.

12. Isogeometric Analysis: Integrating Design and Analysis, Austin, USA, 2018.

11. 2018 World Congress for Computational Mechanics, New York City, USA, 2018.

10. 18th U.S. National Congress for Theoretical and Applied Mechanics, Chicago, USA, 2018.

9. 2016 USACM Conference on Isogeometric Analysis and Meshfree Methods, La Jolla, USA, 2016.

8. 2016 Engineering Mechanics Institute Conference, Vanderbilt University, USA, 2016

7. 10th Southern California Symposium on Flow Physics, University of California, Irvine, USA, 2016

6. 13th U.S. National Congress on Computational Mechanics, San Diego, USA, 2015

5. 2015 Engineering Mechanics Institute Conference, Stanford University, USA, 2015.

4. 9th Southern California Symposium on Flow Physics, San Diego State University, USA, 2015.
3. UCSD Jacobs School of Engineering 34th Annual Research Expo, La Jolla, USA, 2015.
2. UCSD Jacobs School of Engineering 33rd Annual Research Expo, La Jolla, USA, 2014.
1. Isogeometric Analysis: Integrating Design and Analysis, Austin, USA, 2014.

TEACHING EXPERIENCE

1. UIUC CEE360, Structural Engineering
2. UCSD SE 276A/MAE 253A, Finite Elements for Solid Mechanics
3. UCSD SE 278A, Finite Elements for Fluid Mechanics
4. UCSD SE 278B, Computational Fluid-Structure Interaction
5. UCSD SE 200, Applied Mathematics for Structural Engineering
6. UCSD MAE 130C/SE 101C Mechanics III: Vibrations
7. Peking University, Algorithms and Data Structures

STUDENT MENTORSHIP EXPERIENCE

1. Marco Pigazzini, Ph.D. student at UCSD
2. Georgios Moutsanidis, Ph.D. student at UCSD
3. Stephen Lin, Ph.D. student at Northwestern University
4. Qiming Zhu, Ph.D. student at UIUC
5. Ze Zhao, Ph.D. student at UIUC
6. Gurpreet Singh Hora, M.S. student at UIUC
7. Ning Liu, M.S. student at UIUC
8. Sung Min Moon, undergraduate student at UIUC
9. Chen Chang, undergraduate student at UIUC

SERVICE

1. Vice chair, Fluid-Structure Interaction, ASME
2. Committee member, Computational Mechanics, ASME/EMI
3. Committee member, Computational Fluid Dynamics and Fluid–Structure Interaction, USACM

CONFERENCE SESSIONS ORGANIZED

1. "G.I. Taylor Medal Symposium", 56th Annual Technical Meeting for the Society of Engineering Science (SES), 2019, Washington University in St. Louis (With Prof. Thomas JR Hughes)
2. "Advanced CFD and FSI for Renewable Energy", 20th Finite Element in Fluid (FEF) 2019, Chicago. (With Prof. Wentao Yan)
3. "Multi Physics/Scale Modeling for Additive Manufacturing", 20th Finite Element in Fluid (FEF) 2019, Chicago.(With Prof. Wentao Yan)
4. "High-fidelity Computational Modeling of Process-Structure-Property Relationships in Additive Manufacturing", World Congress on Computational Mechanics (WCCM) 2018, New York City. (With Prof. Wentao Yan)

JOURNAL REVIEWERS

1. Computer Methods in Applied Mechanics and Engineering
2. Computers and Fluids
3. Computational Mechanics
4. ASME Journal of Applied Mechanics
5. Journal of Computational Physics
6. Mathematical Models and Methods in Applied Sciences
7. Ocean Engineering
8. Transactions of the Canadian Society for Mechanical Engineering
9. Applied Mathematical Modelling
10. ASCE Journal of Engineering Mechanics
11. ASME Journal of Engineering Materials and Technology
12. Journal of Mechanics of Materials and Structures
13. ASME Journal of Solar Energy Engineering
14. ASCE Journal of Structural Engineering

FUNDING REVIEWERS

1. The Research Grants Council of Hong Kong

OTHER DISTINCTIONS

I play table tennis in my spare time. I was a columnist for Table Tennis World Magazine from 2010 to 2012. I won the following table tennis championship titles in both Peking University and Wuhan University.

1. Champion, Beida Cup of Table Tennis (Team), Peking University, 2012
2. Champion, Stiga Cup of Table Tennis (Men's single), Peking University, 2011
3. Champion, Table Tennis Championships (Team), Wuhan University, 2008
4. Champion, Table Tennis Championships (Team), Wuhan University, 2007