

Yong Hoon Lee, Ph.D.

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Assistant Professor
Department of Mechanical Engineering
The University of Memphis

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EDUCATION

- **Ph.D.** Mechanical Engineering Aug 2020
University of Illinois at Urbana-Champaign, Urbana, IL, USA
Dissertation: “Methods for the integrated design of viscoelastic materials and structural geometry”
Advisors: Dr. James T. Allison (Advisor) and Dr. Randy H. Ewoldt (Co-advisor)
- **M.S.** Mechanical Engineering Aug 2010
Ajou University, Suwon, South Korea
Thesis: “A study on the application of Navier-Stokes equations to the unstructured grid system”
Advisor: Dr. Yun-Ho Choi
- **B.S.** Mechanical Engineering Aug 2008
Ajou University, Suwon, South Korea
Top Graduate in the College of Engineering

PROFESSIONAL APPOINTMENTS AND EXPERIENCES

- **Assistant Professor** Dept. of Mechanical Engineering Aug 2022 – present
The University of Memphis, Memphis, TN
- **Postdoctoral Research Associate** Engineering System Design Laboratory Jul 2020 – Aug 2022
Research Assistant Engineering System Design Laboratory Aug 2015 – Jul 2020
Teaching Assistant Dept. of Industrial and Enterprise Systems Engineering Aug 2019 – Dec 2019
Teaching Assistant Dept. of Mechanical Science and Engineering Jan 2019 – May 2019
University of Illinois at Urbana-Champaign, Urbana, IL
- **Instructor** Dept. of Mechanical and Automotive Engineering Mar 2014 – Jun 2014
Masan University, Changwon, South Korea
- **CAE/CFD Research Engineer** Nuclear Energy Division Jun 2010 – Aug 2013
Korea Nuclear Engineering and Services Corp., Seoul, South Korea
- **Research Assistant** Computational Fluid Dynamics Laboratory Sep 2008 – Aug 2010
Teaching Assistant Dept. of Mechanical Engineering Sep 2008 – Aug 2010
Ajou University, Suwon, South Korea
- **Student Researcher** Thermal Hydraulic Safety Research Division Sep 2008 – Sep 2009
Korea Atomic Energy Research Institute, Daejeon, South Korea

HONORS AND AWARDS

- **Mavis Future Faculty Fellows Academy: Mavis Fellow** Aug 2019 – May 2020
Grainger College of Engineering, University of Illinois at Urbana-Champaign, Urbana, IL
- **List of Teachers Ranked as Excellent by their Students** Dec 2019
University of Illinois at Urbana-Champaign, Urbana, IL
- **2017 Journal of Mechanical Design Editor’s Choice Award: Honorable Mention** Aug 2018
Announced in DOI:10.1115/1.4041528
Yong Hoon Lee et al., *J. Mech. Design*, 139(5):053401, May 2017. DOI:10.1115/1.4036133
American Society of Mechanical Engineers (ASME)

- **2009 ATES Paper Contest for ANSYS Fluent Academic Users: Finalist Award** Aug 2009
Yong Hoon Lee et al., In *ATES Paper Contest for ANSYS Fluent Academic Users
Advanced Technology Engineering Service (ATES)*

PUBLICATIONS

PEER-REVIEWED JOURNAL ARTICLES






(✉ : Lee is the corresponding author)

5. Albert Patterson, Yong Hoon Lee, and James T. Allison, “Generation and enforcement of process-driven manufacturability constraints: A survey of methods and perspectives for product design”, **Journal of Mechanical Design**, 143(11), November 2021, pp.110801. DOI:10.1115/1.4050740
4. Yong Hoon Lee ✉, Jonathon K. Schuh, Randy H. Ewoldt, and James T. Allison, “Simultaneous design of non-Newtonian lubricant and surface texture using surrogate-based multiobjective optimization”, **Structural and Multidisciplinary Optimization**, 60(1), July 2019, pp.99-116. DOI:10.1007/s00158-019-02201-1
3. Jonathon K. Schuh, Yong Hoon Lee, James T. Allison, and Randy H. Ewoldt, “Design-driven modeling of surface-textured full-film lubricated sliding: Validation and rationale of nonstandard thrust observations”, **Tribology Letters**, 65(2), June 2017, pp.35. DOI:10.1007/s11249-017-0818-8
2. Yong Hoon Lee, Jonathon K. Schuh, Randy H. Ewoldt, and James T. Allison, “Enhancing full-film lubrication performance via arbitrary surface texture design”, **Journal of Mechanical Design**, 139(5), May 2017, pp.053401. DOI:10.1115/1.4036133 (**2017 Journal of Mechanical Design Editors’ Choice Award - Honorable Mention**)
1. Dong-Gyu Lee, Jea-Ho Park, Yong Hoon Lee, Chang-Yeol Baeg, and Hyung-Jin Kim, “Natural convection heat transfer characteristics in the canister with horizontal installation of dual purpose cask for spent nuclear fuel”, **Nuclear Engineering and Technology**, 45(7), December 2013, pp.969-978. DOI:10.5516/NET.06.2012.092





ARTICLES IN CONFERENCE PROCEEDINGS

(🗨 : Lee is the presenting author)


13. Athul K. Sundarrajan, Yong Hoon Lee, James T. Allison, and Daniel R. Herber, “Open-loop control co-design of floating offshore wind turbines using linear parameter-varying models”, In *47th Design Automation Conference, ASME IDETC/CIE* (online), DETC2021-67573, August 2021, pp. 1-13. DOI: 10.1115/DETC2021-67573 [FULL PROCEEDING PAPER]
12. Yong Hoon Lee 🗨, Sung Youn Boo, and James T. Allison, “A framework for integrating hydrostatics, hydrodynamics, and rigid-body dynamics for the control co-design of floating offshore vertical-axis wind turbine systems”, In *Wind Energy Science Conference* (Hannover, Germany), May 2021. [EXTENDED ABSTRACT]
11. Saeid Bayat, Yong Hoon Lee, and James T. Allison, “Control co-design of horizontal floating offshore wind turbines using a simplified low order model”, In *Wind Energy Science Conference* (Hannover, Germany), May 2021. [EXTENDED ABSTRACT]
10. Yong Hoon Lee 🗨, Vedant, Randy H. Ewoldt, and James T. Allison, “Strain-actuated solar arrays for spacecraft attitude control assisted by viscoelastic damping”, In *Advances in Structural and Multidisciplinary Optimization, Proceedings of the 13th World Congress of Structural and Multidisciplinary Optimization* (Beijing, China), X. Guo, H. Huang, Eds., Dalian: DUT E&AV Press, January 2020, pp.149-155. ISBN:978-7-89437-207-9 [FULL PROCEEDING PAPER]
9. Albert E. Patterson, Yong Hoon Lee 🗨, and James T. Allison, “Overview of the development and enforcement of process-driven manufacturability constraints in product design”, In *24th Design for Manufacturing and the Life Cycle Conference, ASME IDETC/CIE* (Anaheim, CA, USA), DETC2019-97384, August 2019, pp.1-11. DOI:10.1115/DETC2019-97384 [FULL PROCEEDING PAPER]
8. Chendi Lin, Daniel R. Herber, Vedant, Yong Hoon Lee, Alexander R. M. Ghosh, Randy H. Ewoldt, and James T. Allison, “Attitude control system complexity reduction via tailored viscoelastic damping co-design”, In *AAS Guidance and Control Conference* (Breckenridge, CO, USA), AAS 18-103, February 2018, pp.1-13. [FULL PROCEEDING PAPER]







7. Yong Hoon Lee , Jonathon K. Schuh, Randy H. Ewoldt, and James T. Allison, “Simultaneous design of non-Newtonian lubricant and surface texture using surrogate-based optimization”, In *AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, AIAA SciTech Forum* (Kissimmee, FL, USA), AIAA 2018-1906, January 2018, pp.1-14. DOI:10.2514/6.2018-1906 [FULL PROCEEDING PAPER]
6. Chendi Lin, Yong Hoon Lee, Jonathon K. Schuh, Randy H. Ewoldt, and James T. Allison, “Efficient optimal surface texture design using linearization”, In *Advances in Structural and Multidisciplinary Optimization, Proceedings of the 12th World Congress of Structural and Multidisciplinary Optimization* (Braunschweig, Germany), A. Schumacher, T. Vietor, S. Fiebig, K. U. Bletzinger, K. Maute, Eds., Cham: Springer, January 2018, pp.632-647. DOI:10.1007/978-3-319-67988-4_48 [FULL PROCEEDING PAPER]
5. Yong Hoon Lee , R. E. Corman, Randy H. Ewoldt, and James T. Allison, “A multiobjective adaptive surrogate modeling-based optimization (MO-ASMO) framework using efficient sampling strategies”, In *43rd Design Automation Conference, ASME IDETC/CIE* (Cleveland, OH, USA), DETC2017-67541, August 2017, pp.V02BT03A023. DOI:10.1115/DETC2017-67541 [FULL PROCEEDING PAPER]
4. Yong Hoon Lee , Jonathon K. Schuh, Randy H. Ewoldt, and James T. Allison, “Shape parameterization comparison for full-film lubrication texture design”, In *42nd Design Automation Conference, ASME IDETC/CIE* (Charlotte, NC, USA), DETC2016-60168, August 2016, pp.V02BT03A037. DOI:10.1115/DETC2016-60168 [FULL PROCEEDING PAPER]
3. Dong-Gyu Lee, Yong Hoon Lee, Wi-Soo Jeong, and Jea-Ho Park, “Heat transfer analysis around transport cask under transport hood”, In *8th International Symposium on Radiation Safety Management* (Gyeongju, South Korea), November 2011. [FULL PROCEEDING PAPER]
2. Yong Hoon Lee , Jin-Won Seo, Jae-Hong Park, and Yun-Ho Choi, “Numerical study on performance assessment and installation conditions of an automotive air cleaner”, In *Korean Society for Computational Fluids Engineering Spring Conference* (Jeju, South Korea), 60115923, May 2010, pp.263-270. [FULL PROCEEDING PAPER]
1. Yong Hoon Lee , Jin-Won Seo, and Yun-Ho Choi, “A study of the assessment process of the performance of automotive HVAC system using FLUENT”, In *ATES Paper Contest for ANSYS Fluent Academic Users* (Seoul, South Korea), September 2009. **(Finalist Award.)** [EXTENDED ABSTRACT]

INVITED LECTURE, SEMINAR, AND WORKSHOP

4. Yong Hoon Lee , “Engineering design optimization: practical tutorial”, In MECH 4314: Senior Design I, The University of Memphis, Memphis, TN, November 8, 2022.
3. Yong Hoon Lee , “Design of floating offshore wind turbines using OpenMDAO and Dymos”, In OpenMDAO Workshop, NASA Glenn Research Center, Cleveland, OH, October 24-25, 2022.
2. Yong Hoon Lee , “System-level integrated and multidisciplinary design on floating offshore wind turbine and engineered materials applications”, In Engineering Technology & Industrial Distribution Seminar Series (Departmental Seminar for Graduate Students), Texas A&M University, College Station, TX, October 15, 2021. [ABSTRACT FLYER]
1. Jonathon K. Schuh, Yong Hoon Lee , James T. Allison, and Randy H. Ewoldt, “Rheological design for efficient fluid power”, In CCEFP Webinar Series, February 2016. *Schuh and Lee contributed equally and co-presented.*

ABSTRACT-ONLY PRESENTATIONS AND POSTERS

15. Yong Hoon Lee , Saeid Bayat, and James T. Allison, “Control co-design using a nonlinear wind turbine dynamic model based on OpenFAST linearization”, In *Applied Energy Symposium: MIT A+B* (Cambridge, MA, USA), July 5, 2022.
14. Saeid Bayat, Yong Hoon Lee, and James T. Allison, “Nested control co-design of a spar buoy horizontal-axis floating offshore wind turbine”, In *Applied Energy Symposium: MIT A+B* (Cambridge, MA, USA), July 5, 2022.

13. Yong Hoon Lee , Vedant, and James T. Allison, “Computationally-efficient modeling and optimization of strain-actuated solar arrays with tailored viscoelastic damping for spacecraft attitude control”, In *AAS Guidance and Control Conference* (Breckenridge, CO, USA), February 2020. LINK: <http://hdl.handle.net/2142/106101>
12. Yong Hoon Lee , R. E. Corman, Randy H. Ewoldt, and James T. Allison, “Continuous relaxation spectra and its reduced-dimensionality descriptions for engineering design with linear viscoelasticity”, In *26th Symposium on Fluid Mechanics and Rheology of Nonlinear Materials and Complex Fluids, ASME 2019 IMECE* (Salt Lake City, UT, USA), IMECE2019-13370, November 2019.
11. Jonathon K. Schuh, Yong Hoon Lee, James T. Allison, and Randy H. Ewoldt, “Designing with non-linear viscoelastic fluids”, In *The 70th Annual Meeting of the American Physical Society - Division of Fluid Dynamics* (Denver, CO, USA), November 2017.
10. Jonathon K. Schuh, Yong Hoon Lee, James T. Allison, and Randy H. Ewoldt, “Toward co-design of surface textures and Non-Newtonian fluids for decreased friction in lubricated viscous sliding”, In *The Society of Rheology 89th Annual Meeting* (Denver, CO, USA), October 2017.
9. R. E. Corman, Yong Hoon Lee, James T. Allison, and Randy H. Ewoldt, “Selecting design-appropriate material descriptions for linear viscoelastic materials”, In *The Society of Rheology 89th Annual Meeting* (Denver, CO, USA), October 2017.
8. Jonathon K. Schuh, Yong Hoon Lee, James T. Allison, and Randy H. Ewoldt, “A validated computational model for the design of surface textures in full-film lubricated sliding”, In *The 69th Annual Meeting of the American Physical Society - Division of Fluid Dynamics* (Portland, OR, USA), November 2016.
7. Jonathon K. Schuh, Yong Hoon Lee, James T. Allison, and Randy H. Ewoldt, “Design appropriate modeling for determining optimal friction reduction with surface textures”, In *CCEFP Fluid Power Innovation & Research Conference* (Minneapolis, MN, USA), October 2016.
6. Yong Hoon Lee , Jonathon K. Schuh, Randy H. Ewoldt, and James T. Allison, “Generalization of surface texture shape reduces friction and increases load capacity simultaneously in sliding contact with full-film lubrication”, In *CCEFP Fluid Power Innovation & Research Conference* (Minneapolis, MN, USA), October 2016.
5. Jonathon K. Schuh, Yong Hoon Lee, James T. Allison, and Randy H. Ewoldt, “Surface textures and non-newtonian fluids for decreasing friction in lubricated sliding contact”, In *CCEFP Fluid Power Innovation & Research Conference* (Minneapolis, MN, USA), October 2015.
4. Yong Hoon Lee , Duk Woon Jeong, and Jea Ho Park, “Preliminary design of a transport package for fresh fuels using LS-DYNA”, In *LS-DYNA Korea User Conference* (Seoul, South Korea), November 2012.
3. Yong Hoon Lee , “Thermal design technology for casks considering spent fuel burnup credit”, In *International Technical Seminar on SNF Storage and Transportation* (Daejeon, South Korea), November 2010.
2. Yong Hoon Lee , Dong-Gyu Lee, Jea-Ho Park, Tae-Man Kim, and Hyung-Jin Kim, “Thermal design technology for spent nuclear fuel transport cask”, In *Korea ANSYS User Conference* (Gyeongju, South Korea), September 2010.
1. Jin-Won Seo, Ji-Yeon Kim, Yong Hoon Lee, Yun-Ho Choi, Bongha Song, and Jongpaek Ha, “Numerical study for efficient air distribution in automotive HVAC system”, In *The Korean Society of Automotive Engineers (KSAE) Annual Conference and Exhibition* (Daejeon, South Korea), 76306949, November 2008, pp.594.

TECHNICAL REPORT, COMPUTER CODES, AND OTHERS

9. Yong Hoon Lee and Saeid Bayat “Derivative function surrogate model-based control co-design of nonlinear floating offshore wind turbine models”, 2021. <https://github.com/WEIS-UIUC-CSU/WEIS/tree/uiuc-dfsm>
8. Saeid Bayat and Yong Hoon Lee “Simplified low-order floating offshore wind turbine model-based control co-design implementation for WEIS”, 2021. <https://github.com/WEIS-UIUC-CSU/WEIS/tree/uiuc-proxy>

7. Yong Hoon Lee, “Integrated design analysis and optimization tool for floating offshore vertical-axis wind turbines”, 2020-2021. <https://github.com/FloatVAWT/FloatVAWT-CapytaineDriver>
6. Yong Hoon Lee, Daniel R. Herber, and Athul Krishna Sundarrajan, “Control co-design driver for linear OpenFAST wind turbine model”, 2020. https://github.com/WEIS-UIUC-CSU/FASTLin_DTQP_Driver
5. Tais Rocha Pereira, Albert Patterson, Yong Hoon Lee, and Sherri L. Messimer, “Critical buckling load of thin-walled plastic cylinders in axial and radial loading: overview and FEA case study”, engrXiv, August 2019. DOI:10.31224/osf.io/2mtfu
4. Yong Hoon Lee, “Multiobjective adaptive surrogate modeling-based optimization (MO-ASMO) toolbox II”, 2018. <https://github.com/yonghoonlee/MO-ASMO-II>
3. Yong Hoon Lee, “Multiobjective adaptive surrogate modeling-based optimization (MO-ASMO) toolbox I”, 2017. <https://github.com/yonghoonlee/MO-ASMO-I>
2. Daniel R. Herber, Yong Hoon Lee, and James T. Allison, “DT QP Project”, 2017. <https://github.com/danielrherber/dt-qp-project>
1. Yong Hoon Lee, “A Modular Code for Teaching Surrogate Modeling-Based Optimization”, 2017. https://github.com/yonghoonlee/SMBO_TeachingTool

STUDENT RESEARCH SUPERVISION

UNIVERSITY OF MEMPHIS

- | | |
|--|--------------------|
| 2. Austin L. Griffin, M.S. student (Director of Thesis Research) | Oct 2022 – present |
| 1. Chandler S. Cain, M.S. student (Director of Thesis Research) | Aug 2022 – present |

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

- | | |
|---|---------------------|
| 14. Nowsheen Sharmili, Ph.D. student (dissertation research mentoring) | May 2022 – Aug 2022 |
| 13. Prerna Rathi, M.S. student (non-thesis project mentoring) | Jan 2022 – Aug 2022 |
| 12. Mika Lew, Undergraduate student (undergraduate research mentoring) | Sep 2021 – May 2022 |
| 11. Dario Rodriguez Claudio, M.S. student (thesis research mentoring) | Jun 2021 – Aug 2022 |
| 10. Annabella Console, Undergraduate student (undergraduate research mentoring) | Jun 2021 – Sep 2021 |
| 9. Jane Li, Undergraduate student (undergraduate research mentoring) | Jan 2021 – May 2021 |
| 8. Sagar Sachdev, Undergraduate student (undergraduate research mentoring) | May 2020 – Apr 2021 |
| 7. Daniel Moreno, Undergraduate student (undergraduate research mentoring) | May 2020 – Aug 2020 |
| 6. Kinga Wrobel, Undergraduate student (undergraduate research mentoring) | Dec 2019 – May 2020 |
| 5. Gayatri Dandu, Undergraduate student (undergraduate research mentoring) | Jan 2019 – Dec 2019 |
| 4. Abbey Merges, Undergraduate student (undergraduate research mentoring) | Jan 2019 – Dec 2019 |
| 3. Angad Paintal, M.S. student (thesis research mentoring) | May 2017 – Aug 2018 |
| 2. Chendi Lin, Undergraduate student (undergraduate research mentoring) | May 2016 – May 2018 |
| 1. Abhinab Choudhury, M.S. student (non-thesis project mentoring) | Jan 2016 – Dec 2016 |

SENIOR DESIGN PROJECT TEAM SUPERVISION

- | | |
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| 1. Cecil Shipley, et al., Energy harvester design utilizing fluid flow phenomena | Sep 2022 – May 2023 |
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SERVICES

SERVICES TO THE UNIVERSITY OF MEMPHIS

- | | |
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| □ Graduate Process Team, Department of Mechanical Engineering | Aug 2022 – present |
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SERVICES TO THE PROFESSION

- **Peer Review** of Articles Submitted to Academic Journals and Conference Proceedings
 - Wind Energy (Journal) 2021, 2022
 - Structural and Multidisciplinary Optimization (Journal) 2019, 2020, 2021, 2022
 - Journal of Mechanical Design (Journal) 2020
 - Advances in Tribology (Journal) 2020
 - Engineering Optimization (Journal) 2019, 2020
 - ASME Conference on Smart Materials, Adaptive Structures and Intelligent Systems 2019
 - ASME International Design Engineering Technical Conferences 2017, 2018
 - Engineering Computations (Journal) 2015

OUTREACH TO THE COMMUNITY

- **Community Outreach** *Yankee Ridge Elementary School, Urbana, IL* Apr 2017
Presented a hands-on demonstration of trebuchets with simulation and experimentation as a part of the Urbana School District Junior Scientist Day.

PROFESSIONAL SOCIETY MEMBERSHIPS

- Member, International Society for Structural and Multidisciplinary Optimization (ISSMO) 2019 – present
- Member, American Institute of Aeronautics and Astronautics (AIAA) 2017 – present
- Member, American Society of Mechanical Engineers (ASME) 2015 – present
- Member, Korean-American Scientists and Engineers Association (KSEA) 2022 – present