



H. Onan Demirel, Ph.D.

Curriculum Vitae

 [School of Mechanical, Industrial and Manufacturing Engineering](#)

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ACADEMIC EXPERIENCE

Assistant Professor of Mechanical Engineering (tenure track) 2016-present

School of Mechanical, Industrial and Manufacturing Engineering
Oregon State University

Doctoral Research and Teaching Assistant 2009-2015

School of Industrial Engineering
Purdue University

Undergraduate Research Assistant 2004-2006

School of Industrial Engineering
Purdue University

RESEARCH INTERESTS

My research addresses the increasing need for human-centered design innovation by developing frameworks that integrate theory and methods from design, human factors, and systems engineering. These frameworks ultimately focus on optimizing human well-being and system performance. I am interested in developing early-stage design strategies to advance transformative design, driving sustainable and desirable changes in product/system design and development. My research and teaching span the following thematic areas.

- **Design Theory & Methods**
 - Human-Centered Design
 - AI and Generative Design
 - Product Design & Dev.
 - Early Stage Design
 - Prototyping
- **Human Factors Engineering**
 - Digital Human Modeling
 - Biomechanics & Ergonomics
 - Engineering Anthropometry
 - Vehicle Ergonomics
 - Industrial Design
- **Systems Engineering**
 - Human-System Integration
 - Functional Modeling
 - Education and Learning
 - Safety Engineering
 - Sustainability

EDUCATION

Ph.D. in Industrial Engineering Dec. 2015

School of Industrial Engineering
Purdue University

- Dissertation: [Modular Human-in-the-loop Design Framework Based on Human Factors](#)
- Advisor: Vincent G. Duffy, Ph.D.

M.S. in Industrial Engineering Dec. 2009

School of Industrial Engineering
Purdue University


- Thesis: [Sensory Feedback Mechanism for Virtual Build Methodology](#)
- Advisor: Vincent G. Duffy, Ph.D.

B.S. in Industrial Engineering (Graduated in Industrial Engineering Honors Program) Dec. 2006

School of Industrial Engineering
Purdue University

- Thesis: [User Manual and Examples: Tecnomatix Jack 5.0](#)
- Advisor: Vincent G. Duffy, Ph.D.

PUBLICATIONS [Google Scholar] [↗](#)

All publications have undergone peer review. DOIs () and links to digital prints (eprints) are provided, except the ones marked as "Accepted". Typically, students are listed first, in descending order of their contributions, and the advisors are listed last.

- The asterisk (*) denotes Dr. Demirel's graduate and undergraduate students as co-authors.


Refereed Journal Publications (Published)

- J20. A. Brown, M. H. Goldstein, J. Clay, **H. O. Demirel**, X. Li, and Z. Sha, "A study on generative design reasoning and students' divergent and convergent thinking," *Journal of Mechanical Design*, vol. 146, no. 3, p. 031 405, 2024.
 [10.1115/1.4064564](https://doi.org/10.1115/1.4064564) [↗](#)
- J19. **H. O. Demirel**, M. H. Goldstein, X. Li, and Z. Sha, "Human-centered generative design framework: An early design framework to support concept creation and evaluation," *International Journal of Human-Computer Interaction*, vol. 40, no. 4, pp. 933–944, 2024.
 [10.1080/10447318.2023.2171489](https://doi.org/10.1080/10447318.2023.2171489) [↗](#)
- J18. **H. O. Demirel**, S. Ahmed*, and V. G. Duffy, "Digital human modeling: A review and reappraisal of origins, present, and expected future methods for representing humans computationally," *International Journal of Human-Computer Interaction*, vol. 38, no. 10, pp. 897–937, 2022.
 [10.1080/10447318.2021.1976507](https://doi.org/10.1080/10447318.2021.1976507) [↗](#)
- J17. K. A. Roundtree*, J. R. Cody, J. Leaf, **H. O. Demirel**, and J. A. Adams, "Transparency's influence on human-collective interactions," *J. Hum.-Robot Interact.*, vol. 11, no. 2, 2022.
 [10.1145/3507470](https://doi.org/10.1145/3507470) [↗](#)
- J16. N. F. Soria Zurita*, M. A. Tensa, V. Ferrero, R. B. Stone, B. DuPont, **H. Onan Demirel**, and I. Y. Tumer, "Uncovering human errors associated with system-user interactions using functional modeling," *Journal of Mechanical Design*, vol. 144, no. 8, p. 081 401, 2022.
 [10.1115/1.4054241](https://doi.org/10.1115/1.4054241) [↗](#)
- J15. S. Ahmed*, L. Irshad*, and **H. O. Demirel**, "Prototyping human-centered products in the age of industry 4.0," *Journal of Mechanical Design*, vol. 143, no. 7, p. 071 102, 2021.
 [10.1115/1.4050736](https://doi.org/10.1115/1.4050736) [↗](#)
- J14. S. Ahmed*, L. Irshad*, M. S. Gawand*, and **H. O. Demirel**, "Integrating human factors early in the design process using digital human modelling and surrogate modelling," *Journal of Engineering Design*, vol. 32, no. 4, pp. 165–186, 2021.
 [10.1080/09544828.2020.1869704](https://doi.org/10.1080/09544828.2020.1869704) [↗](#)
- J13. **H. O. Demirel**, L. Irshad*, S. Ahmed*, and I. Y. Tumer, "Digital twin-driven human-centered design frameworks for meeting sustainability objectives," *Journal of Computing and Information Science in Engineering*, vol. 21, no. 3, p. 031 012, 2021.
 [10.1115/1.4050684](https://doi.org/10.1115/1.4050684) [↗](#)
- J12. L. Irshad*, D. Hulse, **H. O. Demirel**, I. Y. Tumer, and D. C. Jensen, "Quantifying the combined effects of human errors and component failures," *Journal of Mechanical Design*, vol. 143, no. 10, p. 101 703, 2021.
 [10.1115/1.4050402](https://doi.org/10.1115/1.4050402) [↗](#)
- J11. K. A. Roundtree*, J. R. Cody, J. Leaf, **H. O. Demirel**, and J. A. Adams, "Human-collective visualization transparency," *Swarm Intelligence*, vol. 15, no. 3, pp. 237–286, 2021.
 [10.1007/s11721-021-00194-6](https://doi.org/10.1007/s11721-021-00194-6) [↗](#)
- J10. L. Irshad*, **H. O. Demirel**, and I. Y. Tumer, "Automated generation of fault scenarios to assess potential human errors and functional failures in early design stages," *Journal of Computing and Information Science in Engineering*, vol. 20, no. 5, p. 051 009, 2020.
 [10.1115/1.4047557](https://doi.org/10.1115/1.4047557) [↗](#)

- J9. S. Ahmed* and **H. O. Demirel**, "A framework to assess human performance in normal and emergency situations," *ASCE-ASME J Risk and Uncert in Engrg Sys Part B Mech Engrg*, vol. 6, no. 1, p. 011 009, 2019.
 doi [10.1115/1.4044791](https://doi.org/10.1115/1.4044791)
- J8. L. Irshad*, S. Ahmed*, **H. O. Demirel**, and I. Y. Tumer, "Computational functional failure analysis to identify human errors during early design stages," *Journal of Computing and Information Science in Engineering*, vol. 19, no. 3, p. 031 005, 2019.
 doi [10.1115/1.4042697](https://doi.org/10.1115/1.4042697)
- J7. L. Irshad*, **H. Onan Demirel**, I. Y. Tumer, and G. Brat, "Using Rio-Paris flight 447 crash to assess human error and failure propagation analysis early in design," *ASCE-ASME J Risk and Uncert in Engrg Sys Part B Mech Engrg*, vol. 6, no. 1, p. 011 008, 2019.
 doi [10.1115/1.4044790](https://doi.org/10.1115/1.4044790)
- J6. N. F. Soria Zurita*, R. B. Stone, **H. Onan Demirel**, and I. Y. Tumer, "Identification of human–system interaction errors during early design stages using a functional basis framework," *ASCE-ASME J Risk and Uncert in Engrg Sys Part B Mech Engrg*, vol. 6, no. 1, p. 011 005, 2019.
 doi [10.1115/1.4044787](https://doi.org/10.1115/1.4044787)
- J5. A. Gune, R. De Amicis, B. Simões, C. A. Sanchez, and **H. O. Demirel**, "Graphically hearing: Enhancing understanding of geospatial data through an integrated auditory and visual experience," *IEEE Computer Graphics and Applications*, vol. 38, no. 4, pp. 18–26, 2018.
 doi [10.1109/MCG.2018.042731655](https://doi.org/10.1109/MCG.2018.042731655)
- J4. **H. O. Demirel** and V. G. Duffy, "Incorporating tactile cues into human-centered virtual product design," *Human Factors and Ergonomics in Manufacturing & Service Industries*, vol. 27, no. 1, pp. 5–16, 2017.
 doi [10.1002/hfm.20402](https://doi.org/10.1002/hfm.20402)
- J3. **H. O. Demirel** and V. G. Duffy, "Building quality into design process through digital human modelling," *International Journal of the Digital Human*, vol. 1, no. 2, pp. 153–168, 2016.
 doi [10.1504/IJDH.2016.077415](https://doi.org/10.1504/IJDH.2016.077415)
- J2. **H. O. Demirel**, L. Zhang, and V. G. Duffy, "Opportunities for meeting sustainability objectives," *International Journal of Industrial Ergonomics*, vol. 51, pp. 73–81, 2016.
 doi [10.1016/j.ergon.2014.09.009](https://doi.org/10.1016/j.ergon.2014.09.009)
- J1. L. Zhang, H. Tong, **H. O. Demirel**, V. G. Duffy, Y. Yih, and B. Bidassie, "A practical model of value co-creation in healthcare service," *Procedia Manufacturing*, vol. 3, pp. 200–207, 2015.
 doi [10.1016/j.promfg.2015.07.129](https://doi.org/10.1016/j.promfg.2015.07.129)

Books and Book Chapters (Published)







- BC4. R. Anattasakul*, T. J. Slama*, and **H. O. Demirel**, "Digital co-creation: An early-stage product individualization framework to bridge the customer–designer void," in *Digital Human Modeling and Medicine*, G. Paul and M. Hamdy Doweidar, Eds., Academic Press, 2023, pp. 659–677.
 doi [10.1016/B978-0-12-823913-1.00022-1](https://doi.org/10.1016/B978-0-12-823913-1.00022-1)
- BC3. M. S. Gawand* and **H. O. Demirel**, "Task simulation automation via digital human models: A case study on cockpit fire and smoke emergencies," in *Human-Automation Interaction: Transportation*, V. G. Duffy, S. J. Landry, J. D. Lee, and N. Stanton, Eds., Cham: Springer International Publishing, 2023, pp. 345–362.
 doi [10.1007/978-3-031-10784-9_21](https://doi.org/10.1007/978-3-031-10784-9_21)
- BC2. **H. O. Demirel**, "Software and demonstration materials – user manual and examples: Tecnomatix Jack 5.0," in *Handbook of Digital Human Modeling: Research for Applied Ergonomics and Human Factors Engineering*, V. G. Duffy, Ed., Boca Raton: CRC Press, 2008.
 doi [10.1201/9781420063523](https://doi.org/10.1201/9781420063523)

- BC1. H. O. Demirel and V. G. Duffy, "Appendix D: Ergonomics software sources," in *Occupational Ergonomics: Theory and Applications*, A. Bhattacharya and J. D. McGlothlin, Eds., 1st ed., Boca Raton: CRC Press, 2008.
 [10.1201/b11717](https://doi.org/10.1201/b11717)

Refereed Conference Publications (Accepted)





- UR-C2. M. Firouzi*, C. Jetton, V. Bhaskaran, H. O. Demirel, and C. Hoyle, "Improving road safety with human-in-the-loop bayesian optimization using driver vision obstruction simulations," in *International Mechanical Engineering Congress & Exposition*, 2024.
- UR-C1. G. B. Joffe* and H. O. Demirel, "Adjustable pedals in automotive design: A digital human modeling-based clearance and clash analysis," in *International Mechanical Engineering Congress & Exposition*, 2024.

Refereed Conference Publications (Published)

- C39. J. Clay, X. Li, M. Goldstein, H. O. Demirel, D. Zabelina, C. Xie, and Z. Sha, "Board 258: Engineering design thinking in the age of generative artificial intelligence," in *2024 ASEE Annual Conference & Exposition Proceedings*, Portland, Oregon, USA, 2024, p. 46 830.
 [10.18260/1-2--46830](https://doi.org/10.18260/1-2--46830)
- C38. M. Firouzi*, V. Bhaskaran, H. O. Demirel, and C. Hoyle, "Metamodels and vision obstruction: A new lens on driver visibility," in *International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, vol. Volume 2A: 44th Computers and Information in Engineering Conference (CIE), 2024, V02AT02A056.
 [10.1115/DETC2024-143657](https://doi.org/10.1115/DETC2024-143657)
- C37. J. Henstrom, R. De Amicis, C. Sanchez, and H. O. Demirel, "VR technical drawing learning activity for college engineering students: Design, development and evaluation," in *Design Tools and Methods in Industrial Engineering III. ADM 2023.*, vol. Lecture Notes in Mechanical Engineering, Florence, Italy, 2024, pp. 397–404.
 [10.1007/978-3-031-52075-4_45](https://doi.org/10.1007/978-3-031-52075-4_45)
- C36. G. B. Joffe* and H. O. Demirel, "The use of digital human modeling to assess vision obstruction in airport taxi operations," in *Digital Human Modeling and Applications in Health, Safety, Ergonomics and Risk Management. HCII 2024.*, vol. Lecture Notes in Computer Science, vol 14709. Washington DC, USA, 2024, pp. 55–68.
 [10.1007/978-3-031-61060-8_5](https://doi.org/10.1007/978-3-031-61060-8_5)
- C35. E. Koolman, J. Z. Clay, X. Li, R. Jiang, M. H. Goldstein, C. Xie, H. O. Demirel, and Z. Sha, "A multi-case study of traditional, parametric, and generative design thinking of engineering students," in *11th International Conference on Design Computing and Cognition*, vol. J. S. Gero, 2024, pp. 89–104.
 [10.1007/978-3-031-71922-6_6](https://doi.org/10.1007/978-3-031-71922-6_6)
- C34. J. Z. Clay, X. Li, H. O. Demirel, M. H. Goldstein, R. Jiang, C. Xie, D. Zabelina, and Z. Sha, "Board 411: Thinking inversely in engineering design: Towards an operational definition of generative design thinking," in *2023 ASEE Annual Conference & Exposition*, Baltimore, Maryland, USA, 2023.
 [10.18260/1-2--42724](https://doi.org/10.18260/1-2--42724)
- C33. H. O. Demirel, A. Jennings*, and S. Srinivasan*, "An early design method to quantify vision obstruction: Formula One (F1) halo case study," in *Digital Human Modeling and Applications in Health, Safety, Ergonomics and Risk Management. Anthropometry, Human Behavior, and Communication. HCII 2022.*, Gothenburg, Sweden, 2022, pp. 32–44.
 [10.1007/978-3-031-05890-5_3](https://doi.org/10.1007/978-3-031-05890-5_3)

- C32. **H. O. Demirel** and S. Srinivasan*, "A proactive ergonomics framework to assess A-pillar vision obstruction," in *Digital Human Modeling and Applied Optimization. AHFE (2022) International Conference.*, vol. 46, New York City, NY, USA, 2022.
doi [10.54941/ahfe1001895](https://doi.org/10.54941/ahfe1001895)
- C31. S. Srinivasan* and **H. O. Demirel**, "Quantifying vision obscuration of A-pillar concept variants using digital human modeling," in *ASME 2022 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, vol. 2: 42nd Computers and Information in Engineering Conference (CIE), St. Louis, Missouri, USA., 2022.
doi [10.1115/DETC2022-89781](https://doi.org/10.1115/DETC2022-89781)
- C30. S. Srinivasan* and **H. O. Demirel**, "Quantifying vision obstruction of Formula One (F1) halo concept variants," in *Proceedings of the 7th International Digital Human Modeling Symposium. DHM 2022.*, vol. 7, Iowa City, IA, USA, 2022.
doi [10.17077/dhm.31755](https://doi.org/10.17077/dhm.31755)
- C29. S. Ahmed* and **H. O. Demirel**, "A Prototyping Framework for Human-Centered Product Design: Preliminary Validation Study," in *Design, User Experience, and Usability: UX Research and Design. International Conference on Human-Computer Interaction. HCII 2021.*, vol. Lecture Notes in Computer Science, vol 12779, Washington DC, USA, 2021, pp. 3–14.
doi [10.1007/978-3-030-78221-4_1](https://doi.org/10.1007/978-3-030-78221-4_1)
- C28. **H. O. Demirel**, L. Irshad*, S. Ahmed*, and I. Y. Tumer, "Digital human-in-the-loop methodology for early design computational human factors," in *Digital Human Modeling and Applications in Health, Safety, Ergonomics and Risk Management. Human Body, Motion and Behavior. HCII 2021.*, vol. Lecture Notes in Computer Science, vol 12777, Washington DC, USA, 2021, pp. 14–31.
doi [10.1007/978-3-030-77817-0_2](https://doi.org/10.1007/978-3-030-77817-0_2)
- C27. M. H. Goldstein, J. Sommer, N. T. Buswell, X. Li, Z. Sha, and **H. O. Demirel**, "Uncovering generative design rationale in the undergraduate classroom," in *2021 IEEE Frontiers in Education Conference (FIE)*, Lincoln, Nebraska, USA, 2021, pp. 1–6.
doi [10.1109/FIE49875.2021.9637365](https://doi.org/10.1109/FIE49875.2021.9637365)
- C26. L. Irshad*, **H. O. Demirel**, and I. Y. Tumer, "The human error and functional failure reasoning framework: How does it scale?" In *ASME 2021 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, vol. 2: 41st Computers and Information in Engineering Conference (CIE), 2021, Online, Virtual.
doi [10.1115/DETC2021-71839](https://doi.org/10.1115/DETC2021-71839)
- C25. X. Li, **H. O. Demirel**, M. H. Goldstein, and Z. Sha, "Exploring generative design thinking for engineering design and design education," in *2021 ASEE Midwest Section Conference*, Fayetteville, Arkansas, USA, 2021.
doi [10.18260/1-2-1125.1153-38349](https://doi.org/10.18260/1-2-1125.1153-38349)
- C24. S. Ahmed* and **H. O. Demirel**, "A conceptual prototyping framework for integrating human factors early in product design," in *ASME 2020 International Mechanical Engineering Congress and Exposition*, vol. Volume 6: Design, Systems, and Complexity. Portland, OR, USA, 2020.
doi [10.1115/IMECE2020-23858](https://doi.org/10.1115/IMECE2020-23858)
- C23. S. Ahmed* and **H. O. Demirel**, "A pre-prototyping framework to explore human-centered prototyping strategies during early design," in *ASME 2020 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, vol. Volume 8: 32nd International Conference on Design Theory and Methodology (DTM), St. Louis, Missouri, USA., 2020.
doi [10.1115/DETC2020-22700](https://doi.org/10.1115/DETC2020-22700)
- C22. S. Ahmed* and **H. O. Demirel**, "House of prototyping guidelines: A framework to develop theoretical prototyping strategies for human-centered design," in *Design, User Experience, and Usability. Interaction Design. HCII 2020.*, vol. Lecture Notes in Computer Science, vol 12200. Copenhagen, Denmark, 2020, pp. 21–38.
doi [10.1007/978-3-030-49713-2_2](https://doi.org/10.1007/978-3-030-49713-2_2)

- C21. H. O. Demirel, "Digital human-in-the-loop framework," in *Digital Human Modeling and Applications in Health, Safety, Ergonomics and Risk Management. Posture, Motion and Health. HCII 2020.*, vol. Lecture Notes in Computer Science, vol 12198, Copenhagen, Denmark, 2020, pp. 18–32.
doi [10.1007/978-3-030-49904-4_2](https://doi.org/10.1007/978-3-030-49904-4_2).
- C20. M. S. Gawand* and H. O. Demirel, "A design framework to automate task simulation and ergonomic analysis in digital human modeling," in *Digital Human Modeling and Applications in Health, Safety, Ergonomics and Risk Management. Posture, Motion and Health. HCII 2020.*, vol. Lecture Notes in Computer Science, vol 12198. Copenhagen, Denmark, 2020, pp. 50–66.
doi [10.1007/978-3-030-49904-4_4](https://doi.org/10.1007/978-3-030-49904-4_4).
- C19. M. S. Gawand* and H. O. Demirel, "Extending the capabilities of digital human modeling: A design framework to assess emergencies early in design," in *ASME 2020 International Mechanical Engineering Congress and Exposition*, vol. 6: Design, Systems, and Complexity. Portland, OR, USA, 2020.
doi [10.1115/IMECE2020-24457](https://doi.org/10.1115/IMECE2020-24457).
- C18. L. Irshad*, D. Hulse, H. O. Demirel, I. Y. Tumer, and D. C. Jensen, "Introducing likelihood of occurrence and expected cost to human error and functional failure reasoning framework," in *ASME 2020 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, vol. Volume 8: 32nd International Conference on Design Theory and Methodology (DTM), St. Louis, Missouri, USA., 2020.
doi [10.1115/DETC2020-22406](https://doi.org/10.1115/DETC2020-22406).
- C17. S. Ahmed*, L. Irshad*, and H. O. Demirel, "Computational prototyping methods to design human centered products of high and low level human interactions," in *ASME 2019 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, vol. 7: 31st International Conference on Design Theory and Methodology. Anaheim, CA, USA, 2019.
doi [10.1115/DETC2019-98450](https://doi.org/10.1115/DETC2019-98450).
- C16. S. Ahmed*, L. Irshad*, H. O. Demirel, and I. Y. Tumer, "A comparison between virtual reality and digital human modeling for proactive ergonomic design," in *Digital Human Modeling and Applications in Health, Safety, Ergonomics and Risk Management. Human Body and Motion. HCII 2019.*, ser. Lecture Notes in Computer Science, Vol 11581. Orlando, FL, USA, 2019, pp. 3–21.
doi [10.1007/978-3-030-22216-1_1](https://doi.org/10.1007/978-3-030-22216-1_1).
- C15. L. Irshad*, S. Ahmed*, H. O. Demirel, and I. Y. Tumer, "Coupling digital human modeling with early design stage human error analysis to assess ergonomic vulnerabilities," in *AIAA Scitech 2019 Forum*, ser. AIAA SciTech Forum, San Diego, CA, USA, 2019.
doi [10.2514/6.2019-2349](https://doi.org/10.2514/6.2019-2349).
- C14. L. Irshad*, H. O. Demirel, and I. Y. Tumer, "Using automated use case generation for early design stage functional failure and human error analysis," in *ASME 2019 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, vol. 1: 39th Computers and Information in Engineering Conference, Anaheim, CA, USA, 2019.
doi [10.1115/DETC2019-98466](https://doi.org/10.1115/DETC2019-98466).
- C13. K. A. Roundtree*, J. R. Cody, J. Leaf, H. O. Demirel, and J. A. Adams, "Visualization design for human-collective teams," in *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, vol. 63, Seattle, WA, USA, 2019, pp. 417–421.
doi [10.1177/1071181319631028](https://doi.org/10.1177/1071181319631028).
- C12. N. F. Soria Zurita*, M. A. Tensa, V. Ferrero, R. B. Stone, B. DuPont, H. O. Demirel, and I. Y. Tumer, "An association rule approach for identifying physical system-user interactions and potential human errors using a design repository," in *ASME 2019 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, vol. 7: 31st International Conference on Design Theory and Methodology, Anaheim, CA, USA, 2019.
doi [10.1115/DETC2019-98424](https://doi.org/10.1115/DETC2019-98424).

- C11. S. Ahmed*, H. O. Demirel*, I. Y. Tumer, and R. B. Stone, "Towards human-induced failure assessment during early design," in *Tools and Methods of Competitive Engineering (TMCE 2018)*, Las Palmas de Gran Canarias, Spain, 2018, pp. 507–520.
eprint: <https://tmce.io.tudelft.nl/pages/proceedings/2018.pdf>.
- C10. S. Ahmed*, M. S. Gawand*, L. Irshad*, and H. O. Demirel, "Exploring the design space using a surrogate model approach with digital human modeling simulations," in *ASME 2018 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, vol. 1B: 38th Computers and Information in Engineering Conference. Quebec City, Quebec, Canada, 2018.
 [10.1115/DETC2018-86323](https://doi.org/10.1115/DETC2018-86323).
- C9. S. Ahmed*, J. Zhang*, and H. O. Demirel, "Assessment of types of prototyping in human-centered product design," in *Digital Human Modeling. Applications in Health, Safety, Ergonomics, and Risk Management. International Conference on Human-Computer Interaction. HCII 2018.*, vol. Lecture Notes in Computer Science, vol 10917. Las Vegas, NV, USA, 2018, pp. 3–18.
 [10.1007/978-3-319-91397-1_1](https://doi.org/10.1007/978-3-319-91397-1_1).
- C8. L. Irshad*, S. Ahmed*, H. O. Demirel, and I. Y. Tumer, "Identification of human errors during early design stage functional failure analysis," in *ASME 2018 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, vol. 1B: 38th Computers and Information in Engineering Conference. Quebec City, Quebec, Canada, 2018.
 [10.1115/DETC2018-85979](https://doi.org/10.1115/DETC2018-85979).
- C7. N. F. Soria Zurita*, R. B. Stone, H. O. Demirel, and I. Y. Tumer, "The function-human error design method (FHEDM)," in *ASME 2018 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, vol. 7: 30th International Conference on Design Theory and Methodology. Quebec City, Quebec, Canada, 2018.
 [10.1115/DETC2018-85327](https://doi.org/10.1115/DETC2018-85327).
- C6. H. O. Demirel and V. G. Duffy, "A sustainable human centered design framework based on human factors," in *Digital Human Modeling and Applications in Health, Safety, Ergonomics, and Risk Management. Healthcare and Safety of the Environment and Transport. HCII 2013.*, vol. Lecture Notes in Computer Science, vol 8025. Las Vegas, NV, USA, 2013, pp. 307–315.
 [10.1007/978-3-642-39173-6_36](https://doi.org/10.1007/978-3-642-39173-6_36).
- C5. H. O. Demirel and V. G. Duffy, "Impact of force feedback on computer aided ergonomic analyses," in *Digital Human Modeling*, ser. Lecture Notes in Computer Science, Vol 5620. San Diego, CA, USA, 2009, pp. 608–613.
 [10.1007/978-3-642-02809-0_64](https://doi.org/10.1007/978-3-642-02809-0_64).
- C4. H. O. Demirel, V. Balchandani, N. V. Hartman, A. Lowe, H. Razali, and V. G. Duffy, "Proof of concept for test of virtual assembly cell with high product complexity," in *International Conference on Applied Human Factors and Ergonomics (AHFE)*, Las Vegas, NV, USA, 2008.
- C3. H. O. Demirel and V. G. Duffy, "RFID for medical implant monitoring and positive patient identification," in *International Conference on Applied Human Factors and Ergonomics (AHFE)*, Las Vegas, NV, USA, 2008.
- C2. H. O. Demirel and V. G. Duffy, "Applications of digital human modeling in industry," in *Digital Human Modeling. International Conference on Human-Computer Interaction. HCII 2007.*, vol. Lecture Notes in Computer Science, vol 4561. Beijing, P.R. China, 2007, pp. 824–832.
 [10.1007/978-3-540-73321-8_93](https://doi.org/10.1007/978-3-540-73321-8_93).
- C1. H. O. Demirel and V. G. Duffy, "Digital human modeling for product lifecycle management," in *Digital Human Modeling. International Conference on Human-Computer Interaction. HCII 2007.*, vol. Lecture Notes in Computer Science, vol 4561. Beijing, P.R. China, 2007, pp. 372–381.
 [10.1007/978-3-540-73321-8_43](https://doi.org/10.1007/978-3-540-73321-8_43).

PRESENTATIONS AND TALKS

- T25. **E-Campus Experience: Analog Sketching and Digital Modeling** 2023
Oregon State University Faculty Forum
Corvallis, Oregon
- T24. **Quantifying Vision Obstruction of Formula One (F1) Halo Concept Variants** 2022
7th International Digital Human Modeling Symposium
Iowa City, Iowa
- T23. **A Proactive Ergonomics Framework to Assess A-Pillar Vision Obstruction** 2022
International Conference on Applied Human Factors and Ergonomics
New York City, New York
- T22. **Quantifying Vision Obstruction in Formula One (F1) Halo Concepts** 2022
International Conference on Human-Computer Interaction
Gothenburg, Sweden
- T21. **Prototyping Framework for Human-Centered Product Design** 2021
International Conference on Human-Computer Interaction
Washington, DC
- T20. **Digital Human-in-the-Loop Framework** 2020
International Conference on Human-Computer Interaction
Copenhagen, Denmark
- T19. **Digital Human-in-the-Loop Methodology for Early Design Human Factors** 2020
International Conference on Human-Computer Interaction
Copenhagen, Denmark
- T18. **Proactive Ergonomics Using Virtual Reality** 2019
International Conference on Human-Computer Interaction
Orlando, FL
- T17. **Coupling Digital Human Modeling with Early Design Stage Human Error Analysis** 2019
AIAA Information Systems Aerospace Systems Info-Tech
San Diego, CA
- T16. **Assessment of Types of Prototyping in Human Centered Product Design** 2019
Human-Computer Interaction International Conference
Las Vegas, NV
- T15. **Human-in-the-loop Design Framework** 2018
NSF Design Workshop - Designing and Developing Global Engineering Systems
Oregon State University, Corvallis, OR
- T14. **Towards human-induced failure assessment during early design** 2018
International Symposium on tools and methods of competitive engineer
Canary Islands, Spain
- T13. **OSU Expertise: Engineering Design and Innovation** 2017
Autodesk Manufacturing Team meeting
Portland, OR
- T12. **OSU Expertise: Engineering Design and Innovation** 2017
Adidas Design Team meeting
Portland, OR
- T11. **Human-in-the-loop Design Framework** 2017
Oregon State University Industry Advisory Board Meeting
Portland, OR
- T10. **Human-in-the-loop Design Framework** 2016
NIKE Sustainability Group meeting
Corvallis, OR

T9. Human-in-the-loop Design Framework Columbia Sportswear Technical Team meeting <i>Corvallis, OR</i>	2016
T8. Human-in-the-loop Design Framework Graduate Design Seminar <i>Oregon State University, Corvallis, OR</i>	2016
T7. Value co-creation in healthcare service systems International Conference on Applied Human Factors and Ergonomics <i>Las Vegas, NV</i>	2015
T6. Digital Human Modeling for product design and development" Whirlpool Co. <i>Benton Harbor, MI</i>	2010
T5. Impact of Force Feedback on Computer Aided Ergonomic Analyses International Conference on Human-Computer Interaction <i>San Diego, CA</i>	2009
T4. RDIF for Medical Implant Monitoring International Conference on Applied Human Factors and Ergonomics <i>Las Vegas, NV</i>	2008
T3. Proof of concept for test of virtual assembly cell with high product complexity International Conference on Applied Human Factors and Ergonomics <i>Las Vegas, NV</i>	2008
T2. Applications of Digital Human Modeling in Industry International Conference on Digital Human Modeling <i>Beijing, China</i>	2007
T1. Digital human modeling for product life-cycle management International Conference on Digital Human Modeling <i>Beijing, China</i>	2007

FUNDING

- **National Science Foundation (NSF)** 2020 – 2025
Educating Designers For Generative Engineering
- \$2,180,320 (Co-PI)
- **The Oregon Manufacturing Innovation Center, Research & Development (OMIC)** 2019 - 2021
Effective Training of Manufacturing and Assembly Via Enhanced Cyber Training Systems
- \$99,804 (Co-PI)
- **Office of Naval Research (ONR)** 2020 - 2021
Swarms, Colonies, and Human Organizations: Towards a Science of Managed Bio-Inspired Collectives
- \$217,124 (Co-PI)
- **National Aeronautics and Space Administration (NASA)** 2018 - 2020
Identification and Validation of Human Errors in Large-Scale Complex Systems
- \$150,000 (PI)
- **National Aeronautics and Space Administration (NASA)** 2017 - 2018
Verification and Validation of Human-Centric Operations in Large Scale Systems
- \$40,000 (PI)
- **Center for Research in Engineering Education Online (CREEdO)** 2020 - 2021
A Transformative Study on The Effectiveness Of Extended Reality Enhancing Engineering Education
- \$25,000 (Role: Co-PI)

- **Oregon State University - Learning Innovation Grant** 2018-2024
D-HUB: Collaborative Design Studio Space for Human-Centered Product and Process Innovation
- \$99,950 (Role: PI)
- **Oregon State University - Undergraduate Research Experience** 2017-2018
Computational Ergonomics Assessment of Laparoscopy Surgical Procedures
- \$5,000 (Role: Co-PI)
- **Oregon State University - Faculty Travel** 2019
2019 The American Institute of Aeronautics and Astronautics InfoTech meeting
- \$1,000 (Role: PI)
- **Oregon State University - Learning Innovation Grant** 2018-2019
Bridging Industrial Design and Mechanical Engineering
- \$10,000 (Role: PI)
- **Oregon State University - Undergraduate Research Experience** 2018 - 2019
Digital Co-Creation: An Early Stage Product Personalization Methodology to Bridge the User-Designer Void
- \$5,000 (Role: Co-PI)
- **Oregon State University - Instructional and Research Equipment** 2017
Dearborn Wing Upgrade and Computational Design Equipment Purchase
- \$6,500 (Role: PI)
- **Oregon State University - Faculty Travel** 2017
2018 Human Computer Interaction International Meeting
- \$1,000 (Role: PI)

ADVISING

Ph.D. Students:	Date of Graduation
5. Mohammadamin Firouzi (Co-advised with Dr. Christopher Hoyle) <u>Title:</u> TBD	12/2025 (expected)
4. Lukman Irshad (Co-advised with Dr. Irem Y. Tumer) <u>Title:</u> A Framework to Evaluate the Risk of Human- and Component-related Vulnerability Interactions ↗	09/2021
3. Salman Ahmed <u>Title:</u> A Methodology to Design Pre-Prototyping Strategies for Human-Centered Product/Workplace During Conceptual Design Process ↗	06/2021
2. Karina A. Roundtree (Co-advised with Dr. Julie A. Adams) <u>Title:</u> Achieving Transparency in Human-Collective Systems ↗	08/2020
1. Nicolas Soria Zurita (Co-advised with Dr. Irem Y. Tumer) <u>Title:</u> The Function-Human Error Design Method (FHEDM) ↗	06/2019
M.S. Students:	
7. Yitong Bu (Co-advised with Dr. Javier Calvo-Amodio) <u>Title:</u> TBD	06/2025 (expected)
6. Sriram Srinivasan <u>Title:</u> Early Design Evaluation of See-Through Automotive A-pillar Concepts Using Digital Human Modeling and Mixed Reality Techniques ↗	09/2022
5. Taylor R. P. Mellon <u>Title:</u> Using Digital Human Modeling to Evaluate and Improve Car Pillar Design: A Proof of Concept and Design of Experiments ↗	09/2021

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| 4. | MihirSunil Gawand
Title: Automating Digital Human Modeling for Task Simulation and Ergonomic Evaluation to Consider Emergency Ergonomics Early in Design | 09/2019 |
| 3. | Kamolnat Tabattanon <i>(Co-advised with Dr.Katharine M. Hunter-Zaworski)</i>
Title: Design of an Accessible Sleeper Compartment for Next Generation Passenger Rail: Investigation of User Needs and Application of Human Factors through Digital Human Modeling | 05/2018 |
| 2. | Alex Jennings
Title: Percent Area Visual Obscuration of F1 Racecar Canopies | 03/2018 |
| 1. | Jianfu Zhang
Title: Exploration of the Integration of Markerless Motion Capture and Virtual Reality for Ergonomics Assessment of Products in Early Design | 03/2018 |

Undergraduate Students:

	Dates
11. Po-Yen Huang	03/2023 - present
10. Gabrielle Joffe	09/2022 - present
9. Annie Rachel Thomas	10/2019 - 05/2021
8. Timothy James Slama	06/2017 - 06/2019
7. William R. Chick	01/2019 - 03/2019
6. Valerie Rose Byxbe	04/2016 - 06/2018
5. Mason Eragor	04/2016 - 03/2017
4. Gabriel Kemling	04/2016 - 03/2017
3. Yiqui Lui	09/2017 - 11/2017
2. Joseph Unfred	04/2016 - 12/2016
1. Timothy Edward Wellette	04/2016 - 10/2016

Graduate Thesis or Project Committees:

15. Samantha Kang, Ph.D. in Mechanical Engineering	2026 (expected)
14. Vignesh Bhaskaran, Ph.D. in Mechanical Engineering	2026 (expected)
13. Kiernan Kilkenny, M.S. in Mechanical Engineering	2024
12. Myles Robinson, M.S. in Mechanical Engineering	2023
11. Chengda Li, M.S. in Mechanical Engineering	2023
10. Taewan Lee, Ph.D. in Mechanical Engineering	2022
9. Ryan Racel Quick, M.S. in Mechanical Engineering	2022
8. Dogan Yirmibesoglu, Ph.D. in Robotics and Mechanical Engineering	2020
7. Mohammed Hossein Pakravanmobarakeh, Ph.D. in Mechanical Engineering	2019
6. Gaofeng Bai, M.S. in Mechanical Engineering	2019
5. Trung Bao Pham, Ph.D. in Mechanical Engineering	2019
4. Weifeng Huang, Ph.D. in Mechanical Engineering	2017
3. Nima Rafibakhsh, Ph.D. in Mechanical Engineering	2017
2. Chirag Shah, M.S. in Mechanical Engineering	2017
1. Yue Liu, M.S. in Mechanical Engineering	2016

Graduate Council Representative

5. Deanna Flynn, Ph.D. in Mechanical Engineering	2025 (expected)
4. Jacob Gradwohl, Ph.D. in Civil Engineering	2024 (expected)

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| 3. Brian Zhang, Ph.D. in Mechanical Engineering | 2023 |
| 2. Jeffrey Klow, Ph.D. in Robotics and Mechanical Engineering | 2020 |
| 1. Mike Hector, M.S. in Mechanical Engineering | 2019 |

Senior Design ME 418 and ME 419

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| 10. Simon Pauken, Victoria Gouw, Uriel Perez, and Roxanne Bahn-Bales
<i>Home Autoinjector</i> | 2023-2024 |
| 9. Daniel Bassich, Paige Kingsley, Tanner Johnson, Kaidan Odom, and Matthew Stahlberg
<i>Hyster-Yale Forced Air Debris Deflector</i> | 2022-2023 |
| 8. Ivan Chen, Daniel Coffey, and Faith Holm
<i>Enclosed Forklift Compartment</i> | 2021-2022 |
| 7. Brock Crolley, Ryan J. Goss, Zicheng Longm and Peter Allen Moshinsky
<i>Badminton Launcher</i> | 2021-2022 |
| 6. Allison Martz, Brayden Wiggle, Amar Naggar, To Phan, and Le Phan
<i>Photography Apparatus for a Chemical Biology Lab</i> | 2021-2022 |
| 5. Spencer Sneider, Caleb Schuh, and Kyra Emmer
<i>Development of an Effective, Escape-proof Trap for Capturing Pest Snails</i> | 2020-2021 |
| 4. Christopher Marangoni Norris and Theodora Brooke Perednia
<i>ROV Kit to Teach Young Engineers</i> | 2019-2020 |
| 3. Tyler Forehand, Gordon Colfax, and Isshu Lee
<i>Electric Lever Feedback</i> | 2017-2018 |
| 2. Edward Soller, Griffin Seager, and Mohammed Almazrouei
<i>Manual Hydraulic Simulation System</i> | 2016-2017 |
| 1. Parker Bruns, Ashlen Watrous, and Jordan Gregoire
<i>Innovative Right Arm Brace to Assist With Elbow Flexion and Wrist Extension</i> | 2016-2017 |

TEACHING

Oregon State University

- **ENGR 248: Engineering Graphics and 3-D Modeling** (3 credits)
Introduction to graphical communication theory, including freehand sketching, geometric construction, multi-view, pictorial, sectional and auxiliary view representation, and dimensioning techniques.
– Fall: 2016, 2018, 2023, 2024
– Winter: 2016, 2018, 2024
– Spring: 2016, 2017, 2019
- **ME611: Modern Product Design** (4 credits)
Product development and prototyping is examined from a research standpoint in this course. Customer outcomes gathering, functional modeling, product architecture, and modern techniques for concept generation and selection are explored.
– Fall: 2016, 2019, 2020
– Winter: 2022, 2023, 2024
- **ME599: Design for Human Modeling** (4 credits)
Project-based course provides an introduction to theory and applications in Digital Human Modeling (DHM), human-centered modern product design, and computational ergonomics.
– Winter: 2018, 2020
– Spring: 2022, 2024

- **ME507: Design Seminar** (1 credit)
Graduate level course focuses on exposing graduate students to the wide range of research being pursued in mechanical engineering.
– *Winter 2018*
- **ME502: Independent Studies** (4 credits)
Topics will include systems visualization and prototyping techniques for early design (embodiment), including sketch-based modeling (sketch-to-surface or sketch-to-solid models), realistic CAD modeling, photo-realistic rendering, animations, and virtual-reality.
– *Winter 2019*

Purdue University

- **IE 558: Safety Engineering** (3 credits)(Co-taught with Dr. Vincent G. Duffy)
Application of human factors and engineering practice in accident prevention and the reduction of health hazards are presented. The objective of this course is to provide an understanding of the safety and health practices that fall within the responsibilities of the engineer in the industry.
– *Spring 2013*
- **IE 385: Work Analysis and Design** (3 credits)(Lab instructor)
Fundamentals of work methods and measurement. Applications of engineering, psychological, and physiological principles to the analysis and design of human work systems. Lectures and laboratory sessions include designing and analyzing workstations through Catia and JACK.
– *Spring 2011, 2013, 2014*

PROFESSIONAL SERVICE

Journal Reviewer

- ASME Journal of Mechanical Design (JMD)
- ASME Journal of Computing and Information Science in Engineering (JCISE)
- International Journal of Human Factors and Ergonomics (IJHFE)
- International Journal of Vehicle Design (IJVD)
- Research in Engineering Design (RED)
- International Journal of the Digital Human (IJDH)
- Technology in Society
- Ergonomics
- Applied Ergonomics
- Ergonomics in Design
- Safety Science
- Fire Safety Journal

Conference Reviewer

- American Society of Mechanical Engineers (ASME) International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC-CIE)
- Human-Computer Interaction International (HCII)
- American Institute of Aeronautics and Astronautics (AIAA) InfoTech
- International Digital Human Modeling Symposium (DHM)

Conference Scientific Committee, Board Member and/or Session Organizer

- Human Factors in Design and Manufacturing at International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (ASME-IDETC)

- Digital Human Modeling and Applications in Health, Safety, Ergonomics and Risk Management at Human-Computer Interaction International (HCII-DHM)
- International Digital Human Modeling Symposium (DHM)

UNIVERSITY SERVICE

University Level

- Graduate School Award Review (2021, 2022, 2023)
- Engineering and Design for Society (EDS) Initiative (2018 - 2020)

College Level

- College Of Engineering Commencement Marshall (2017, 2019, 2020)
- College of Engineering Outreach and Recruitment Committee (2019 - 2020)

School Level

- MIME Faculty Search Committee (2016 - 2017, 2017 - 2018, 2018 - 2019)
- Mechanical Engineering graduate admissions (Design Group) (2016 - present)

HONORS AND AWARDS

- Best Paper Award in the ASME International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC-CIE) (2019)
- OSU MIME Strategic Excellence Initiatives Instructional and Research Equipment Award (2017, 2019)
- OSU MIME Strategic Excellence Initiatives Faculty Travel Award (2019)
- Purdue University Teaching Academy Graduate Teaching Award (2015)
- Purdue University Graduate School Summer Research Fellowship (2014)
- Purdue University Graduate School Summer Research Fellowship (2012)
- Alpha Pi Mu National Industrial Engineering Honor Society (2006)
- Purdue University Industrial Engineering Honors Program (2006)

TECHNICAL SKILLS

- **Computer Aided Design:** Catia V5, SolidWorks, Autodesk Fusion, Siemens NX, Shapr3D, Onshape, KeyShot
- **Computer Aided Engineering:** JACK, 3DSSPP, Ansys, SimScale, OpenSim, Santos Virtual Human
- **Vector and Freehand Drawing:** OmniGraffle, Lucid, SmartDraw, Microsoft Visio, SketchBook Pro
- **Data Analysis:** SPSS, JMP Pro, DataGraph
- **Press and Publication:** MS Office, OS Productivity, Adobe Suite, L^AT_EX
- **Hardware:** Motion Capture, Virtual Reality, Eye-tracking, Lumbar Motion Monitor, Simulators