IREM Y. TUMER'S PUBLICATIONS:

Journal Articles Published:

1. D.L. Van Bossuyt, L. Carvalho, A. Dong, I.Y. Tumer, "On Measuring Risk Attitudes." Accepted for publication. *ASME Journal of Mechanical Design*. 2013.
2. S. Sierla, B.M. O'Halloran, T. Karhela, N. Papakonstantinou, I.Y. Tumer, "Common cause failure analysis of cyber-physical systems situated in constructed environments." Accepted for publication. Journal of *Research in Engineering Design*. 2013.
3. D.L. Van Bossuyt, I.Y. Tumer, S. Wall, "A Case for Trading Risk in Conceptual Design Trade Studies." In Print. *Journal of Research in Engineering Design*. 2012.
4. C. Metha, D.C. Jensen, I.Y. Tumer, C. Smidts, "An Integrated Multi-Domain Functional Failure and Propagation Analysis Approach for Safe System Design." In Print. *AIEDAM Journal*. 2012.
5. S.K. Oman, I.Y. Tumer, K.L. Wood, C. Seepersad, "A Comparison of Creativity and Innovation Metrics and Validation through In-Class Design Projects." 24(1): 65-92. *Journal of Research in Engineering Design*.
6. N. Papakonstantinou, S. Sierla, I.Y. Tumer, D. Jensen, "Multi-Scale Simulation on Interactions and Emergent Failure Behavior During Complex System Design." *ASME Journal of Computing & Information Sciences in Engineering.* 12(3). September 2012.
7. S. Sierla, I.Y. Tumer, N. Papakonstantinou, K. Koskinen, D. Jensen, "Early Integration of Safety to the Mechatronic System Design Process for the Functional Failure Identification and Propagation Framework." *Mechatronics*. 22(2): 137-151. March 2012.
8. D.L. VanBossuyt, C. Hoyle, I.Y. Tumer, A. Dong, "Considering Risk Attitude Using Utility Theory in Risk-Based Design." *AIEDAM Journal*. *Special Issue on Intelligent Decision Support and Modeling*. 26(4): 2012.
9. R. Hutcheson, D.A. McAdams, I.Y. Tumer, "Function-based behavioral modeling." *The International Journal of Computer Aided Engineering and Technology*. 4(3). 2012.
10. A.M. Agogino, A.K. Goel, C.C. Hayes, W.C. Regli, I.Y. Tumer, "Intelligent Systems in Product Design: A Retrospective." *ASME Journal of Computing & Information Sciences in Engineering*. 11(2). June 2011.
11. I.Y. Tumer and C.S. Smidts, "Integrated design-stage failure analysis of software-driven hardware systems." *IEEE Transactions on Computers*. *Special Issue on Science of Design for Safety Critical Systems*. 60(8): 1072-1084. 2011.
12. E. Coatanea, S. Nonsiri, T. Ritola, I.Y. Tumer, D. Jensen, "Dimensional analysis based behavioral modeling for design-stage failure analysis." *ASME Journal of Mechanical Design*. 133(12). 2011.
13. T. Kurtoglu, D. Jensen, I.Y. Tumer, "A functional failure reasoning methodology for evaluation of conceptual system architectures"**.** *Research in Engineering Design*. 21:209-234. 2010.
14. M.R. Bohm, K.R. Haapala, K. Poppa, R.B. Stone, I.Y. Tumer, "Towards integrating sustainability analysis into the conceptual phase of product design." *ASME Journal of Mechanical Design*. Special Issue in Sustainable design. 132. September 2010.
15. C. Hoyle, I.Y. Tumer, A.F. Mehr, W. Chen, "Health Management Allocation for Conceptual System Design." *ASME Journal of Computing & Information Sciences in Engineering.* 9(2). 2009.
16. N. Patransky Robson, J.M. McCarthy, I.Y. Tumer, "Failure recovery planning for an arm actuator failure on an exploratory rover." *The IEEE Transactions on Robotics***.** 25(6): 1448-1453. 2009.
17. K. Grantham-Lough, R.B. Stone, and I.Y. Tumer, "The risk in early design method." *Journal of Engineering Design*. 20: 2. 2009.
18. K Grantham-Lough, M. Van Wie, R.B. Stone, F. Barrientos, I.Y. Tumer, "Promoting risk communication in early design through linguistic analyses and tools." *Research in Engineering Design*, 20 (1): 29. 2009.
19. K. Grantham-Lough, R.B. Stone, I.Y. Tumer, "Failure prevention through effective cataloguing and utilization of failure events," *Journal of Failure Analysis and Prevention*. 8(5): 469-481. 2008.
20. N. Patransky Robson, J.M. McCarthy, I.Y. Tumer, "The algebraic synthesis of a spatial TS chain for a prescribed acceleration task." *Mechanisms and Machine Theory*. 2008.
21. K. Grantham-Lough, R.B. Stone, I.Y. Tumer, "Implementation Procedures for the Risk in Early Design (RED) Method," *Journal of Industrial and Systems Engineering*. 2(2): 126-143. 2008.
22. T. Kurtoglu and I.Y. Tumer, "A graph based fault identification and propagation framework for functional design of complex systems." *ASME Journal of Mechanical Design*. 30(5). 2008.
23. D.A. McAdams, D. Comella, I.Y. Tumer, "Exploring effective methods for simulating damaged structures with geometric variation." *ASME Journal of Applied Mechanics, JAM-05-116.* 2007.
24. A.F. Mehr and I.Y. Tumer, "Risk based decision making for managing resources during the design of complex aerospace systems." *ASME Journal of Mechanical Design*. Special Issue on Robust and Reliability Based Design. 128(4): 1014-1022. July 2006.
25. R.B. Stone, I.Y. Tumer, M.E. Stock, "Linking product functionality to historical failures to improve failure analysis in design." *Research in Engineering Design*. 16(2): 96-108. 2005.
26. D.A. McAdams and I.Y. Tumer, "Toward Intelligent fault detection in turbine blades: Variational vibration models of damaged pinned-pinned beams." *ASME Journal of Vibration and Acoustics*. 127(5): 467-474. 2005.

27. R.B. Stone, I.Y. Tumer, M. VanWie, "The Function-Failure Design Method." *ASME Journal of Mechanical Design*. 127(3): 397-407. 2005.
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29. I.Y. Tumer, R.B. Stone, "Mapping Function to Failure during High-Risk Component Development." Journal of *Research in Engineering Design*. 14: 25-33. 2003.
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31. I.Y. Tumer, E.M. Huff, "On the Effects of Production and Maintenance Variations on Rotating Machinery Component Performance." *Journal of Quality in Maintenance and Engineering*. 8(3): 226-238. 2002. (Highly Commended Award, 2002 Volume, Emerald Literati Club.)
32. E.M. Huff, I.Y. Tumer, E. Barszcz, M. Dzwonczyk, J. McNames, "Analysis of Maneuvering Effects on Transmission Vibrations in an AH-1 Cobra Helicopter." *Journal of the American Helicopter Society*. 47(1): 42-49. January 2002.
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35. I.Y. Tumer, K.L. Wood, I.J. Busch-Vishniac, "A Mathematical Transform to Improve Part Surface Quality in Manufacturing." *ASME Journal of Manufacturing Science and Engineering*. 122(1): 273-279. February 2000.
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Journal Articles in Review:

1. D.C. Jensen, I.Y. Tumer, T. Kurtoglu, "Using Fault Modes Dependencies to Identify Potential Fault Propagation Paths." Journal paper in review.
2. B.M. O'Halloran, R.B. Stone, I.Y. Tumer, "The Function Failure Rate Design Method." Journal paper in review.
3. C. Hsiao, M. Ruffino, R. Malak, I.Y. Tumer, T. Doolen, "Discovering Taxonomic Structure in Design Archive Information: A Study of Risk-Mitigating Actions in a Large Engineering Organization." Journal paper in review.
4. S.K. Oman, B. Gilchrist, I.Y. Tumer, R.B. Stone, "Towards Computer Directed Innovation in Product Design." Journal paper in review.
5. S. Sierla, B.M. O'Halloran, H. Nikula, N. Papakonstantinou, I.Y. Tumer, "Safety analysis of mechatronic product lines." Journal paper in review.
6. B.M. O'Halloran, C. Hoyle, R.B. Stone, and I.Y. Tumer, "The Early Design Reliability Prediction Method," Journal paper in review.
7. B.M. O'Halloran, B. Haley, D.C. Jensen, R.B. Stone, and I.Y. Tumer, "The early implementation of failure modes into component model libraries." Journal paper in review.
8. H. Mehrpouyan, D. Giannakopoulou, G.P. Brat, and I.Y. Tumer, "Complex engineering system design verification using Assume-Guarantee reasoning." Journal paper in review.
9. H. Mehrpouyan, B. Haley, I.Y. Tumer, C. Hoyle, A. Dong, "Resiliency Analysis for Complex System Design." Journal paper in review.
10. D. Jensen, O. Bello, C. Hoyle, I.Y. Tumer, "Reasoning about Emergent System Failure Behavior using Large Sets of Qualitative Function-Based Simulation Data." Journal paper in review.
11. N. Papakonstantinou, S. Sierla, K. Caritoudi, B. O'Halloran, T. Karhela, I.Y. Tumer, "Security Impact Assessment with the Functional-Failure Identification and Propagation Framework." Journal paper in review.
12. C. Hoyle and I.Y. Tumer, "System-level Design Reliability Enabled by Copulas. Journal paper in review.
13. S.K. Oman, I.Y. Tumer, R.B. Stone, T.L. Doolen, "Reducing the Subjectivity in the Comparative Creativity Assessment Method by Including Function Combinations." Journal paper in preparation.
14. B. Gilchrist, C. Hoyle, I.Y. Tumer, "A Latent Variable Approach to Quantifying Creativity". Journal paper in preparation.
15. B. Gilchrist, R. Arlitt, D. VanBossuyt, I.Y. Tumer, R.B. Stone, K. Haapala, "Functional Impact Based Evaluation of Innovative Product Design." Journal paper in preparation.

Fully Refereed Conference Articles:

1. B. Gilchrist, I.Y. Tumer, D.L. Van Bossuyt, R. Arlitt, R.B. Stone, "Functional impact comparison of common and innovative products." *The 2013 ASME Computers & Information in Engineering Conference*, IDETC/CIE2013. Portland, OR. August 2013
2. H. Mehrpouyan, B. Haley, A. Dong, I.Y. Tumer, C. Hoyle, "Resilient design of complex engineered systems." *The 2013 ASME Computers & Information in Engineering Conference*, IDETC/CIE2013. Portland, OR. August 2013.
3. H. Mehrpouyan, D. Giannakopoulou, G.P. Brat, I.Y. Tumer, C. Hoyle, "Complex system design verification using assumption generation." *The 2013 ASME Computers & Information in Engineering Conference*, IDETC/CIE2013. Portland, OR. August 2013.
4. D. Kasthurlrathna, A. Dong, M. Piraveenan, I.Y. Tumer, "The failure tolerance of mechatronic software systems to random and targeted attacks." *The 2013 ASME Computers & Information in Engineering Conference*, IDETC/CIE2013. Portland, OR. August 2013.
5. B.M. O'Halloran, R.B. Stone, I.Y. Tumer, "Developing new design requirements to reduce failures in early complex system design." *The 2013 ASME Computers & Information in Engineering Conference*, IDETC/CIE2013. Portland, OR. August 2013.
6. R.L. Yim, J.M. Castaneda, T.L. Doolen, I.Y. Tumer, R.J. Malak, "A student of engineering design project complexity and risk indicators." *The 2013 ASME Computers & Information in Engineering Conference*, IDETC/CIE2013. Portland, OR. August 2013.
7. N. Papakonstantinou, S. Sierla, B. O'Halloran, I.Y. Tumer, "A simulation based approach to automate event tree generation for early complex system design." *The 2013 ASME Computers & Information in Engineering Conference*, IDETC/CIE2013. Portland, OR. August 2013.
8. J. Piacenza, S.H. Seyedmahmoudi, K. Haapala, C. Hoyle, I.Y. Tumer, "Comparison of sustainability performance: cross-laminated timber vs. concrete." *The 2013 ASME Computers & Information in Engineering Conference*, IDETC/CIE2013. Portland, OR. August 2013.
9. H. Mehrpouyan, B. Haley, A. Dong, I.Y. Tumer, C. Hoyle, "Resilient design of complex engineering systems against cascading failure." *The 2013 International Mechanical Engineering Congress & Exposition*. San Diego, CA. November 2013.
10. B. Gilchrist, C. Rebhuhn, C. Hoyle, I.Y. Tumer, "A new take on quantifying innovation: a latent variable approach." *The 2013 International Mechanical Engineering Congress & Exposition*. San Diego, CA. Nov 2013.
11. J. Piacenza, J. Fields, M.A. Bozorgirad, C. Hoyle, I.Y. Tumer, "Robust design of the North American power grid to mitigate cascading failures." *The 2013 International Mechanical Engineering Congress & Exposition*. San Diego, CA. November 2013.
12. R. Yim, J. Castaneda, T. Doolen, I.Y. Tumer, R. Malak, "Functional complexity impact on engineering design project risk indicators." *The 2013 Industrial and Systems Engineering Conference*.
13. J. Piacenza, C. Hoyle, I.Y. Tumer, J. Fields, "Power grid design trades and system optimization considering renewable energy strategies and environmental impact." *The 2012 International Mechanical Engineering Congress & Exposition*. Houston, TX. November 2012.
14. D.L. Van Bossuyt, C. Hoyle, I.Y. Tumer, R. Malak, T. Doolen, A. Dong, "Towards an early-phase conceptual system design risk-informed decision making framework." *The 2012 International Mechanical Engineering Congress & Exposition*. Houston, TX. November 2012.
15. B.M. O'Halloran, C. Hoyle, I.Y. Tumer, R.B. Stone, " The early design reliability prediction method." *The 2012 International Mechanical Engineering Congress & Exposition*. Houston, TX. November 2012.
16. B.M. O'Halloran, R.B. Stone, I.Y. Tumer, "A survey of risk and reliability methods and their impediments to move into practice." *The 2012 International Mechanical Engineering Congress & Exposition*. Houston, TX. November 2012.
17. B.M. O'Halloran, R. Arlitt, J. Novak, R.B. Stone, I.Y. Tumer, "Applying design feedback to generate requirements for an intuitive biologically inspired design tool." *The 2012 International Mechanical Engineering Congress & Exposition*. Houston, TX. November 2012.
18. K.R. Poppa, R.B. Stone, I.Y. Tumer, "A functional similarity measure inspired by latent semantic indexing." *The 2012 International Mechanical Engineering Congress & Exposition*. Houston, TX. November 2012.
19. D.C. Jensen, C. Hoyle, I.Y. Tumer, "Clustering of function-based failure analysis results to evaluate and reduce system level risks." *The 2012 ASME Computers & Information in Engineering Conference*, IDETC/CIE2012. Chicago, IL. August 2012.
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21. B.M. O'Halloran, C. Hoyle, R.B. Stone, I.Y. Tumer, "A method to calculate function and component failure distributions using a hierarchical bayesian model and frequency weighting." *The 2012 ASME Design Theory and Methodology Conference*, IDETC/CIE2012. Chicago, IL. August 2012.
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26. J. Piacenza, C. Hoyle, I.Y. Tumer, "Lighting optimization for sustainable building design considering user productivity." *The 2012 ASME Design Automation Conference*, IDETC/CIE2012. Chicago, IL. August 2012.
27. N. Papakonstantinou, S. Sierla, D.C. Jensen, I.Y. Tumer, " Using fault propagation analyses for early elimination of unreliable design alternatives of complex cyber-physical systems." *The 2012 ASME Computers & Information in Engineering Conference*, IDETC/CIE2012. Chicago, IL. August 2012.
28. C. Rebhuhn, B. Gilchrist, S.K. Oman, I.Y. Tumer, R.B. Stone, K. Tumer, "A multiagent framework for component-level creativity evaluation." MABD/AAMAS Conference. Valencia, Spain. June 2012.
29. M.T. Koopmans, S. Meicke, I.Y. Tumer, B. Paasch, "Experimental polymer bearing wear assessment and test stand benchmarking for ocean wave energy converter technology. The 2011 Prognostics and Health Management Conference, Montreal, Canada. September 2011.
30. B.M. O'Halloran, R.B. Stone, I.Y. Tumer, "Early design stage reliability analysis using function-flow failure rates." The 2011 International Mechanical Engineering Congress & Exposition. Denver, CO. Nov 2011.
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32. D.L. VanBossuyt, L. Carvalho, A. Dong, I.Y. Tumer, "On measuring engineering risk attitudes." *The 2011 ASME International Design Theory and Methodology Conference*, IDETC/CIE2011. Washington, DC. August 2011.
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35. M.T. Koopmans and I.Y. Tumer, "Electromechanical actuator testbed coupling design to reduce prognostic model uncertainty." *The 2011 ASME Computers & Information in Engineering Conference*, IDETC/CIE2011. Washington, DC. August 2011.
36. N. Papakonstantinou, S. Sierla, D. Jensen, I.Y. Tumer, "On applying functional failure analysis to large complex systems: Boiling water reactor design." *The 2011 ASME Computers & Information in Engineering Conference*, IDETC/CIE2011. Washington, DC. August 2011.
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39. D.L. VanBossuyt and I.Y. Tumer, "Toward understanding collaborative design center trade study software upgrade and migration risks." *The 2010 International Mechanical Engineering Congress & Exposition*. IMECE 2010-39213. Vancouver, Canada. November 2010.
40. S.K. Oman, M.D. Koch, I.Y. Tumer, M.R. Bohm, "Verifying the usability of failure-based computational design methods." *The 2010 International Mechanical Engineering Congress & Exposition*. IMECE 2010-39259. Vancouver, Canada. November 2010.
41. M.D. Koch, R.J. Schulte, I.Y. Tumer, "On the utilization of web-based collaboration tools by student design teams." *The 2010 International Mechanical Engineering Congress & Exposition*. IMECE 2010-39207. Vancouver, Canada. November 2010.
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43. M.R. Bohm, K.R. Haapala, K. Poppa, R.B. Stone, I.Y. Tumer, "Environmental analysis of consumer products during the conceptual phase of product design." *The 2010 ASME Design for Manufacturing and the Lifecycle Conference*, IDETC/CIE2010. Montreal, Canada. August 2010.
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50. S. Kramer and I.Y. Tumer, "Towards StateCharts based failure propagation analysis for designing embedded PHM systems". The 2009 *Prognostics and Health Management Conference*, PHM'09. San Diego, CA. 2009.
51. D.C. Jensen, I.Y. Tumer, and T. Kurtoglu, "Flow State Logic (FSL) for analysis of failure propagation in early design". 2009 ASME *International Design Theory and Methodology Conference*, IDETC/CIE2009. San Diego, CA. September 2009.
52. E. Walkingshaw, P. Strauss, J. Mueller, M. Erwig, and I.Y. Tumer, "A Formal Representation of Software-Hardware System Design". 2009 ASME *International Design Theory and Methodology Conference*, IDETC/CIE2009. September 2009, San Diego, CA.
53. S. Kramer and I.Y. Tumer, "A framework for early assessment of failures during the design of PHM systems". 2009 ASME *Computers and Information in Engineering Conference*, IDETC/CIE2009. San Diego, CA. September 2009.
54. F. Farhangmehr and I.Y. Tumer, "Optimal risk-based integrated design (ORBID) for multidisciplinary complex systems. International Conference and Engineering Design (ICED'09). Stanford, CA. August 2009.
55. S.K. Oman and I.Y. Tumer, "The potential of creativity metrics for mechanical engineering concept design". International Conference and Engineering Design (ICED'09). Stanford, CA. August 2009.
56. M. Koch and I.Y. Tumer, "Towards Open Design: The emergent face of engineering design". International Conference and Engineering Design (ICED'09). Stanford, CA. August 2009.
57. N. Patransky Robson, J.M. McCarthy, I.Y. Tumer, "Exploring New Strategies for Failure Recovery of Crippled Robot Manipulators". ASME/IFToMM International Conference on Reconfigurable Mechanisms and Robots (ReMAR 2009). 2009.
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59. F. Farhangmehr and I.Y. Tumer, "Capture, Assessment and Communication Tool for Uncertainty Simulation (CACTUS) in complex systems." ASME 2008 *International Mechanical Engineering Congress and Exposition*. Safety Engineering, Risk Analysis, and Reliability Methods Track. Boston, MA. 2008.
60. J. Mueller and I.Y. Tumer, "A methodology for identifying hardware states and requirements to ensure system reliability and success in software-hardware systems". ASME 2008 *International Mechanical Engineering Congress and Exposition*. Safety Engineering, Risk Analysis, and Reliability Methods Track. Boston, MA. 2008.
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62. A. Brown, I.Y. Tumer, R. Paasch, "Early stage failure modeling and safety analysis applied to the design of wave energy converters." 2008 ASME *International Design Theory and Methodology Conference*, IDETC/CIE2008. New York City, NY. 2008.
63. R. Hutcheson, D.A. McAdams, R.B. Stone, I.Y. Tumer, "Effect of Model Element Fidelity Within a Complex Function-Based Behavioral Model" 2008 ASME *Computers and Information in Engineering Conference*, Integrated Systems Engineering Symposium, IDETC/CIE2008. New York City, NY. 2008.
64. R.S. Hutcheson, D.A. McAdams, R.B. Stone, I.Y. Tumer, "Function-based behavioral modeling." 2007 ASME *International Design Theory and Methodology Conference*, IDETC/CIE2007. Las Vegas, NV. 2007.
65. T. Kurtoglu and I.Y. Tumer, "A graph-based framework for early assessment of functional failures in complex systems." 2007 ASME *International Design Theory and Methodology Conference*, IDETC/CIE2007. Las Vegas, NV. 2007.
66. F. Barrientos, I.Y. Tumer, D. Ullman, "Modeling uncertainty reduction in concurrent engineering design teams." 2007 ASME *Reliability, Safety, and Failure Prevention Conference*, IDETC/CIE2007. Las Vegas,

NV. 2007.
67. C. Hoyle, A.F. Mehr, I.Y. Tumer, W. Chen, "Cost-benefit analysis of ISHM in aerospace systems." 2007 ASME *Computers and Information in Engineering Conference*, Integrated Systems Engineering Symposium, IDETC/CIE2007. Las Vegas, NV. 2007.
68. R.S. Hutcheson and I.Y. Tumer, "FACE—A function-based methodology for analyzing critical events." In ASME *Design Automation Conference*. DETC2006-99535. Philadelphia, PA. 2006.
69. A.F. Mehr and I.Y. Tumer, "A multidisciplinary and multiobjective system analysis and optimization methodology for embedding integrated systems health management into NASA's complex systems." In ASME *Design Automation Conference*, IDETC/CIE2006. DETC2006-99619. Philadelphia, PA. 2006.
70. K. Grantham, R.B. Stone, I.Y. Tumer, "The risk in early design (RED) method: likelihood and consequence formulations." ASME *Design Automation Conference,* IDETC/CIE2006. DETC2006-99375. Philadelphia, PA. 2006.
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