

# Irem Y Tumer

## List of Publications by Year in descending order

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89  
papers

1,466  
citations

430442

18  
h-index

377514

34  
g-index

90  
all docs

90  
docs citations

90  
times ranked

612  
citing authors

#	ARTICLE	IF	CITATIONS
1	Quantifying the Combined Effects of Human Errors and Component Failures. Journal of Mechanical Design, Transactions of the ASME, 2021, 143, .	1.7	3
2	Exploring Architectures for Integrated Resilience Optimization. Journal of Aerospace Information Systems, 2021, 18, 665-678.	1.0	1
3	How Uncertain Is Too Uncertain? Validity Tests for Early Resilient and Risk-Based Design Processes. Journal of Mechanical Design, Transactions of the ASME, 2021, 143, .	1.7	2
4	Understanding the Impact of Decision Making on Robustness During Complex System Design: More Resilient Power Systems. ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part B: Mechanical Engineering, 2020, 6, .	0.7	6
5	Using Rio-Paris Flight 447 Crash to Assess Human Error and Failure Propagation Analysis Early in Design. ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part B: Mechanical Engineering, 2020, 6, .	0.7	3
6	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, 2020, 20, .	1.7	9
7	Coupling Digital Human Modeling with Early Design Stage Human Error Analysis to Assess Ergonomic Vulnerabilities. , 2019, , .		7
8	The early design reliability prediction method. Research in Engineering Design - Theory, Applications, and Concurrent Engineering, 2019, 30, 489-508.	1.2	3
9	Computational Functional Failure Analysis to Identify Human Errors During Early Design Stages. Journal of Computing and Information Science in Engineering, 2019, 19, .	1.7	10
10	Quantifying the Resilience-Informed Scenario Cost Sum: A Value-Driven Design Approach for Functional Hazard Assessment. Journal of Mechanical Design, Transactions of the ASME, 2019, 141, .	1.7	13
11	The role of bridging nodes in behavioral network models of complex engineered systems. Design Science, 2018, 4, .	1.1	9
12	Optimizing Function-Based Fault Propagation Model Resilience Using Expected Cost Scoring. , 2018, , .		1
13	Identification of Human Errors During Early Design Stage Functional Failure Analysis. , 2018, , .		3
14	The Function-Based Design for Sustainability Method. Journal of Mechanical Design, Transactions of the ASME, 2017, 139, .	1.7	21
15	Robust Topology Design of Complex Infrastructure Systems. ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part B: Mechanical Engineering, 2017, 3, .	0.7	5
16	Resilient System Design Using Cost-Risk Analysis With Functional Models. , 2017, , .		6
17	Functional Models With Inherent Behavior: Towards a Framework for Safety Analysis Early in the Design of Complex Systems. , 2016, , .		11
18	Complex Engineered Systems Design Verification Based on Assume-Guarantee Reasoning. Systems Engineering, 2016, 19, 461-476.	1.6	6

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19	A Comparison of Network-Based Metrics of Behavioral Degradation in Complex Engineered Systems. Journal of Mechanical Design, Transactions of the ASME, 2016, 138, .	1.7	14
20	Discovering taxonomic structure in design archives with application to risk-mitigating actions in a large engineering organisation. Journal of Engineering Design, 2016, 27, 146-169.	1.1	6
21	Safety-informed design: Using subgraph analysis to elicit hazardous emergent failure behavior in complex systems. Artificial Intelligence for Engineering Design, Analysis and Manufacturing: AIEDAM, 2016, 30, 466-473.	0.7	1
22	A Plant-Wide and Function-Specific Hierarchical Functional Fault Detection and Identification (HFFDI) System for Multiple Fault Scenarios on Complex Systems. , 2015, , .		4
23	Validating model-based design simulation: The impact of abstraction and fidelity levels. , 2015, , .		0
24	Resiliency analysis for complex engineered system design. Artificial Intelligence for Engineering Design, Analysis and Manufacturing: AIEDAM, 2015, 29, 93-108.	0.7	25
25	Simulation Based Machine Learning for Fault Detection in Complex Systems Using the Functional Failure Identification and Propagation Framework. , 2014, , .		9
26	Combination of Compositional Verification and Model Checking for Safety Assessment of Complex Engineered Systems. , 2014, , .		0
27	Design of complex engineered systems. Artificial Intelligence for Engineering Design, Analysis and Manufacturing: AIEDAM, 2014, 28, 307-309.	0.7	0
28	Reasoning about system-level failure behavior from large sets of function-based simulations. Artificial Intelligence for Engineering Design, Analysis and Manufacturing: AIEDAM, 2014, 28, 385-398.	0.7	9
29	The development of a repository of innovative products (RIP) for inspiration in engineering design. International Journal of Design Creativity and Innovation, 2014, 2, 186-202.	0.8	3
30	The early implementation of failure modes into existing component model libraries. Research in Engineering Design - Theory, Applications, and Concurrent Engineering, 2014, 25, 203-221.	1.2	8
31	Safety analysis of mechatronic product lines. Mechatronics, 2014, 24, 231-240.	2.0	7
32	Common cause failure analysis of cyber-physical systems situated in constructed environments. Research in Engineering Design - Theory, Applications, and Concurrent Engineering, 2013, 24, 375-394.	1.2	32
33	A case for trading risk in complex conceptual design trade studies. Research in Engineering Design - Theory, Applications, and Concurrent Engineering, 2013, 24, 259-275.	1.2	10
34	A comparison of creativity and innovation metrics and sample validation through in-class design projects. Research in Engineering Design - Theory, Applications, and Concurrent Engineering, 2013, 24, 65-92.	1.2	130
35	Empirical Findings about Risk and Risk Mitigating Actions from a Legacy Archive of a Large Design Organization. Procedia Computer Science, 2013, 16, 844-852.	1.2	3
36	Developing New Design Requirements to Reduce Failures in Early Complex Systems Design. , 2013, , .		2

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37	A framework to generate fault-based behavior models for complex systems design. , 2013, , .		3
38	On Measuring Engineering Risk Attitudes1. Journal of Mechanical Design, Transactions of the ASME, 2013, 135, .	1.7	19
39	Resilient Design of Complex Engineered Systems. , 2013, , .		4
40	A Simulation Based Approach to Automate Event Tree Generation for Early Complex System Designs. , 2013, , .		6
41	A Method to Compute Early Design Risk Using Customer Importance and Function-Flow Failure Rates. , 2013, , 291-300.		0
42	Risk attitudes in risk-based design: Considering risk attitude using utility theory in risk-based design. Artificial Intelligence for Engineering Design, Analysis and Manufacturing: AIEDAM, 2012, 26, 393-406.	0.7	19
43	A failure modes and mechanisms naming taxonomy. , 2012, , .		17
44	Using Fault Propagation Analyses for Early Elimination of Unreliable Design Alternatives of Complex Cyber-Physical Systems. , 2012, , .		5
45	Simulation of Interactions and Emergent Failure Behavior During Complex System Design. Journal of Computing and Information Science in Engineering, 2012, 12, .	1.7	18
46	A Survey of Early Design Risk and Reliability Methods and Their Impediments to Move Into Practice. , 2012, , .		0
47	The Early Design Reliability Prediction Method. , 2012, , .		4
48	Clustering Function-Based Failure Analysis Results to Evaluate and Reduce System-Level Risks. , 2012, , .		4
49	Developing a Taxonomy of Risk-Mitigating Actions From a Legacy Database of a Large Design Organization. , 2012, , .		1
50	A Method to Calculate Function and Component Failure Distributions Using a Hierarchical Bayesian Model and Frequency Weighting. , 2012, , .		4
51	Link Between Function-Flow Failure Rates and Failure Modes for Early Design Stage Reliability Analysis. , 2011, , .		8
52	Multi-Stage Uncertainty Quantification for Verifying the Correctness of Complex System Designs. , 2011, , .		7
53	Early Design Stage Reliability Analysis Using Function-Flow Failure Rates. , 2011, , .		4
54	Intelligent Support for Product Design: Looking Backward, Looking Forward. Journal of Computing and Information Science in Engineering, 2011, 11, .	1.7	20

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55	On Measuring Engineering Risk Attitudes. , 2011, , .		2
56	A Framework for Building Dimensionless Behavioral Models to Aid in Function-Based Failure Propagation Analysis. Journal of Mechanical Design, Transactions of the ASME, 2011, 133, .	1.7	6
57	Capturing Interactions and Emergent Failure Behavior in Complex Engineered Systems at Multiple Scales. , 2011, , .		9
58	Toward Understanding Collaborative Design Center Trade Study Software Upgrade and Migration Risks. , 2010, , .		3
59	A functional failure reasoning methodology for evaluation of conceptual system architectures. Research in Engineering Design - Theory, Applications, and Concurrent Engineering, 2010, 21, 209-234.	1.2	87
60	Assessing Creativity and Innovation at the Concept Generation Stage in Engineering Design: A Classroom Experiment. , 2010, , .		5
61	Towards Risk as a Tradeable Parameter in Complex System Design Trades. , 2010, , .		4
62	Promoting risk communication in early design through linguistic analyses. Research in Engineering Design - Theory, Applications, and Concurrent Engineering, 2009, 20, 29-40.	1.2	6
63	The risk in early design method. Journal of Engineering Design, 2009, 20, 155-173.	1.1	76
64	Flow State Logic (FSL) for Analysis of Failure Propagation in Early Design. , 2009, , .		24
65	Health Management Allocation During Conceptual System Design. Journal of Computing and Information Science in Engineering, 2009, 9, .	1.7	19
66	A Risk-Informed Decision Making Methodology for Evaluating Failure Impact of Early System Designs. , 2008, , .		6
67	A Graph-Based Fault Identification and Propagation Framework for Functional Design of Complex Systems. Journal of Mechanical Design, Transactions of the ASME, 2008, 130, .	1.7	141
68	Modeling the Propagation of Failures in Software Driven Hardware Systems to Enable Risk-Informed Design. , 2008, , .		12
69	Exploring Effective Methods for Simulating Damaged Structures With Geometric Variation: Toward Intelligent Failure Detection. Journal of Applied Mechanics, Transactions ASME, 2007, 74, 191-202.	1.1	6
70	Risk Assessment in Early Software Design Based on the Software Function-Failure Design Method. Proceedings - IEEE Computer Society's International Computer Software and Applications Conference, 2007, , .	0.0	8
71	A Function-Based Methodology for Analyzing Critical Events. , 2006, , 1193.		14
72	Risk-Based Decision-Making for Managing Resources During the Design of Complex Space Exploration Systems. Journal of Mechanical Design, Transactions of the ASME, 2006, 128, 1014-1022.	1.7	42

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73	Linking product functionality to historic failures to improve failure analysis in design. Research in Engineering Design - Theory, Applications, and Concurrent Engineering, 2005, 16, 96-108.	1.2	58
74	The Function-Failure Design Method. Journal of Mechanical Design, Transactions of the ASME, 2005, 127, 397-407.	1.7	150
75	Toward Intelligent Fault Detection in Turbine Blades: Variational Vibration Models of Damaged Pinned-Pinned Beams. Journal of Vibration and Acoustics, Transactions of the ASME, 2005, 127, 467-474.	1.0	3
76	Function-Based Design of a Spacecraft Power System Diagnostics Testbed. , 2005, , .		4
77	Computational Methods to Predict and Avoid Design Failure. , 2005, , .		0
78	Failure Analysis in Subsystem Design for Space Missions. , 2004, , 201.		26
79	Failure Mode Identification through Clustering Analysis. Quality and Reliability Engineering International, 2004, 20, 511-526.	1.4	38
80	Mapping function to failure mode during component development. Research in Engineering Design - Theory, Applications, and Concurrent Engineering, 2003, 14, 25-33.	1.2	88
81	Analysis of Triaxial Vibration Data for Health Monitoring of Helicopter Gearboxes. Journal of Vibration and Acoustics, Transactions of the ASME, 2003, 125, 120-128.	1.0	30
82	Going Back in Time to Improve Design: The Elemental Function-Failure Design Method. , 2003, , .		7
83	On the effects of production and maintenance variations on machinery performance. Journal of Quality in Maintenance Engineering, 2002, 8, 226-238.	1.0	9
84	A Framework for Creating a Function-Based Design Tool for Failure Mode Identification. , 2002, , 195.		22
85	An Analysis of Maneuvering Effects on Transmission Vibrations in an AH-1 Cobra Helicopter. Journal of the American Helicopter Society, 2002, 47, 42-49.	0.5	13
86	Deriving Function-Failure Similarity Information for Failure-Free Rotorcraft Component Design. , 2002, , 121.		16
87	Signal Analysis Using Karhunen-Loève Transformation: Application to Hydrodynamic Forces. Journal of Offshore Mechanics and Arctic Engineering, 2000, 122, 208-213.	0.6	1
88	Condition Monitoring Methodology for Manufacturing and Design. , 1998, , .		2
89	Improving Manufacturing Precision Using the Karhunen-Loève Transform. , 1997, , .		3