

Jonathan Cagan

List of Publications by Year in descending order

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135
papers

4,108
citations

101384

36
h-index

138251

58
g-index

137
all docs

137
docs citations

137
times ranked

1605
citing authors

#	ARTICLE	IF	CITATIONS
1	On the Benefits and Pitfalls of Analogies for Innovative Design: Ideation Performance Based on Analogical Distance, Commonness, and Modality of Examples. <i>Journal of Mechanical Design, Transactions of the ASME</i> , 2011, 133, .	1.7	201
2	Speaking the Buick language: capturing, understanding, and exploring brand identity with shape grammars. <i>Design Studies</i> , 2004, 25, 1-29.	1.9	192
3	The Meaning of "Near" and "Far": The Impact of Structuring Design Databases and the Effect of Distance of Analogy on Design Output. <i>Journal of Mechanical Design, Transactions of the ASME</i> , 2013, 135, .	1.7	177
4	The role of timing and analogical similarity in the stimulation of idea generation in design. <i>Design Studies</i> , 2008, 29, 203-221.	1.9	167
5	Computer-Based Design Synthesis Research: An Overview. <i>Journal of Computing and Information Science in Engineering</i> , 2011, 11, .	1.7	159
6	Fixation or inspiration? A meta-analytic review of the role of examples on design processes. <i>Design Studies</i> , 2015, 39, 70-99.	1.9	142
7	Capturing a rebel: modeling the Harley-Davidson brand through a motorcycle shape grammar. <i>Research in Engineering Design - Theory, Applications, and Concurrent Engineering</i> , 2002, 13, 139-156.	1.2	121
8	A-Design: An Agent-Based Approach to Conceptual Design in a Dynamic Environment. <i>Research in Engineering Design - Theory, Applications, and Concurrent Engineering</i> , 1999, 11, 172-192.	1.2	118
9	Empirical Studies of Designer Thinking: Past, Present, and Future. <i>Journal of Mechanical Design, Transactions of the ASME</i> , 2015, 137, .	1.7	85
10	Agent-Based Synthesis of Electromechanical Design Configurations. <i>Journal of Mechanical Design, Transactions of the ASME</i> , 2000, 122, 61-69.	1.7	81
11	Quantifying Aesthetic Form Preference in a Utility Function. <i>Journal of Mechanical Design, Transactions of the ASME</i> , 2009, 131, .	1.7	76
12	Discovering Structure in Design Databases Through Functional and Surface Based Mapping. <i>Journal of Mechanical Design, Transactions of the ASME</i> , 2013, 135, .	1.7	76
13	Crowdsourcing inspiration: Using crowd generated inspirational stimuli to support designer ideation. <i>Design Studies</i> , 2019, 61, 1-29.	1.9	71
14	A neuroimaging investigation of design ideation with and without inspirational stimuli—understanding the meaning of near and far stimuli. <i>Design Studies</i> , 2019, 60, 1-38.	1.9	69
15	Innovative dome design: Applying geodesic patterns with shape annealing. <i>Artificial Intelligence for Engineering Design, Analysis and Manufacturing: AIEDAM</i> , 1997, 11, 379-394.	0.7	68
16	An Extended Pattern Search Algorithm for Three-Dimensional Component Layout. <i>Journal of Mechanical Design, Transactions of the ASME</i> , 2000, 122, 102-108.	1.7	66
17	GGREADA: A graph grammar-based machine design algorithm. <i>Research in Engineering Design - Theory, Applications, and Concurrent Engineering</i> , 1997, 9, 195-213.	1.2	65
18	An advanced modeling system for optimization of wind farm layout and wind turbine sizing using a multi-level extended pattern search algorithm. <i>Energy</i> , 2016, 106, 802-814.	4.5	65

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19	Design Team Convergence: The Influence of Example Solution Quality. Journal of Mechanical Design, Transactions of the ASME, 2010, 132, .	1.7	62
20	Recursive annealing: A computational model for machine design. Research in Engineering Design - Theory, Applications, and Concurrent Engineering, 1995, 7, 102-125.	1.2	61
21	The influence of open goals on the acquisition of problem-relevant information.. Journal of Experimental Psychology: Learning Memory and Cognition, 2007, 33, 876-891.	0.7	59
22	The design of novel roof trusses with shape annealing: assessing the ability of a computational method in aiding structural designers with varying design intent. Design Studies, 1999, 20, 3-23.	1.9	58
23	Human confidence in artificial intelligence and in themselves: The evolution and impact of confidence on adoption of AI advice. Computers in Human Behavior, 2022, 127, 107018.	5.1	58
24	An Extended Pattern Search Approach to Wind Farm Layout Optimization. Journal of Mechanical Design, Transactions of the ASME, 2012, 134, .	1.7	55
25	Lifting the Veil: Drawing insights about design teams from a cognitively-inspired computational model. Design Studies, 2015, 40, 119-142.	1.9	54
26	Creating cross-over vehicles: Defining and combining vehicle classes using shape grammars. Artificial Intelligence for Engineering Design, Analysis and Manufacturing: AIEDAM, 2006, 20, 217-246.	0.7	53
27	Learning to Design From Humans: Imitating Human Designers Through Deep Learning. Journal of Mechanical Design, Transactions of the ASME, 2019, 141, .	1.7	52
28	Sampling uncertainty in coordinate measurement data analysis. Precision Engineering, 1998, 22, 153-163.	1.8	49
29	Languages and semantics of grammatical discrete structures. Artificial Intelligence for Engineering Design, Analysis and Manufacturing: AIEDAM, 1999, 13, 241-251.	0.7	48
30	Rolling with the punches: An examination of team performance in a design task subject to drastic changes. Design Studies, 2015, 36, 99-121.	1.9	48
31	Understanding Consumer Tradeoffs Between Form and Function Through Metaconjoint and Cognitive Neuroscience Analyses. Journal of Mechanical Design, Transactions of the ASME, 2013, 135, .	1.7	47
32	The effect of incidental hints when problems are suspended before, during, or after an impasse.. Journal of Experimental Psychology: Learning Memory and Cognition, 2011, 37, 140-148.	0.7	46
33	Inside the Mind: Using Neuroimaging to Understand Moral Product Preference Judgments Involving Sustainability. Journal of Mechanical Design, Transactions of the ASME, 2017, 139, .	1.7	43
34	Innovative design of mechanical structures from first principles. Artificial Intelligence for Engineering Design, Analysis and Manufacturing: AIEDAM, 1987, 1, 169-189.	0.7	40
35	Mining Process Heuristics From Designer Action Data via Hidden Markov Models. Journal of Mechanical Design, Transactions of the ASME, 2017, 139, .	1.7	40
36	PLASHTRAN: An expert consultant on two-dimensional finite element modeling techniques. Engineering With Computers, 1987, 2, 199-208.	3.5	39

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37	Capturing Human Sequence-Learning Abilities in Configuration Design Tasks Through Markov Chains. Journal of Mechanical Design, Transactions of the ASME, 2017, 139, .	1.7	39
38	Optimizing Design Teams Based on Problem Properties: Computational Team Simulations and an Applied Empirical Test. Journal of Mechanical Design, Transactions of the ASME, 2017, 139, .	1.7	38
39	The A-Design approach to managing automated design synthesis. Research in Engineering Design - Theory, Applications, and Concurrent Engineering, 2003, 14, 12-24.	1.2	35
40	The Impact of Sustainability on Consumer Preference Judgments of Product Attributes. Journal of Mechanical Design, Transactions of the ASME, 2015, 137, .	1.7	33
41	The Role of Functionality in the Mental Representations of Engineering Students: Some Differences in the Early Stages of Expertise. Cognitive Science, 2006, 30, 65-93.	0.8	32
42	Powerâ€“Velocity Process Design Charts for Powder Bed Additive Manufacturing. Journal of Mechanical Design, Transactions of the ASME, 2017, 139, .	1.7	32
43	A Micro Language: Generating MEMS Resonators by Using a Coupled Form â€” Function Shape Grammar. Environment and Planning B: Planning and Design, 2000, 27, 615-626.	1.7	31
44	Objective Function Effect Based Pattern Searchâ€”Theoretical Framework Inspired by 3D Component Layout. Journal of Mechanical Design, Transactions of the ASME, 2007, 129, 243-254.	1.7	31
45	Identifying product shape relationships using principal component analysis. Research in Engineering Design - Theory, Applications, and Concurrent Engineering, 2008, 18, 163-180.	1.2	31
46	Influencing generative design through continuous evaluation: Associating costs with the coffeemaker shape grammar. Artificial Intelligence for Engineering Design, Analysis and Manufacturing: AIEDAM, 1999, 13, 253-275.	0.7	29
47	A cautionary tale about the impact of AI on human design teams. Design Studies, 2021, 72, 100990.	1.9	29
48	Adaptive Inspirational Design Stimuli: Using Design Output to Computationally Search for Stimuli That Impact Concept Generation. Journal of Mechanical Design, Transactions of the ASME, 2020, 142, .	1.7	29
49	Simulated Annealing and the Generation of the Objective Function: A Model of Learning During Problem Solving. Computational Intelligence, 1997, 13, 534-581.	2.1	27
50	Designing inner hood panels through a shape grammar based framework. Artificial Intelligence for Engineering Design, Analysis and Manufacturing: AIEDAM, 2002, 16, 273-290.	0.7	25
51	Supporting Designers' Hierarchies through Parametric Shape Recognition. Environment and Planning B: Planning and Design, 2002, 29, 913-931.	1.7	24
52	Multiagent Shape Grammar Implementation: Automatically Generating Form Concepts According to a Preference Function. Journal of Mechanical Design, Transactions of the ASME, 2009, 131, .	1.7	24
53	Experiential Conjoint Analysis: An Experience-Based Method for Eliciting, Capturing, and Modeling Consumer Preference. Journal of Mechanical Design, Transactions of the ASME, 2014, 136, .	1.7	24
54	Evolutionary Multi-Agent Systems: An Adaptive and Dynamic Approach to Optimization. Journal of Mechanical Design, Transactions of the ASME, 2009, 131, .	1.7	23

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55	Shape annealing solution to the constrained geometric knapsack problem. CAD Computer Aided Design, 1994, 26, 763-770.	1.4	21
56	Learning from design experience in an agent-based design system. Research in Engineering Design - Theory, Applications, and Concurrent Engineering, 2004, 15, 77.	1.2	20
57	A conceptual framework for combining artificial intelligence and optimization in engineering design. Research in Engineering Design - Theory, Applications, and Concurrent Engineering, 1997, 9, 20-34.	1.2	19
58	On the use of shape grammars as expert systems for geometry-based engineering design. Artificial Intelligence for Engineering Design, Analysis and Manufacturing: AIEDAM, 2000, 14, 431-439.	0.7	19
59	Transferring Design Strategies From Human to Computer and Across Design Problems. Journal of Mechanical Design, Transactions of the ASME, 2019, 141, .	1.7	19
60	Protocol-Based Multi-Agent Systems: Examining the Effect of Diversity, Dynamism, and Cooperation in Heuristic Optimization Approaches. Journal of Mechanical Design, Transactions of the ASME, 2011, 133, .	1.7	18
61	Curve-Based Shape Matching: Supporting Designers' Hierarchies through Parametric Shape Recognition of Arbitrary Geometry. Environment and Planning B: Planning and Design, 2006, 33, 523-540.	1.7	17
62	Decidual Vasculopathy Identification in Whole Slide Images Using Multiresolution Hierarchical Convolutional Neural Networks. American Journal of Pathology, 2020, 190, 2111-2122.	1.9	17
63	Dimensional Variable Expansion—A formal approach to innovative design. Research in Engineering Design - Theory, Applications, and Concurrent Engineering, 1991, 3, 75-85.	1.2	16
64	Synergistic human-agent methods for deriving effective search strategies: the case of nanoscale design. Research in Engineering Design - Theory, Applications, and Concurrent Engineering, 2015, 26, 145-169.	1.2	16
65	Are you better off alone? Mitigating the underperformance of engineering teams during conceptual design through adaptive process management. Research in Engineering Design - Theory, Applications, and Concurrent Engineering, 2019, 30, 85-102.	1.2	16
66	Human Versus Artificial Intelligence: A Data-Driven Approach to Real-Time Process Management During Complex Engineering Design. Journal of Mechanical Design, Transactions of the ASME, 2022, 144, .	1.7	16
67	Expert representation of design repository space: A comparison to and validation of algorithmic output. Design Studies, 2013, 34, 729-762.	1.9	15
68	Decoding the agility of artificial intelligence-assisted human design teams. Design Studies, 2022, 79, 101094.	1.9	15
69	The Effect of Product Representation in Visual Conjoint Analysis. Journal of Mechanical Design, Transactions of the ASME, 2016, 138, .	1.7	14
70	Drawing Inspiration From Human Design Teams for Better Search and Optimization: The Heterogeneous Simulated Annealing Teams Algorithm. Journal of Mechanical Design, Transactions of the ASME, 2016, 138, .	1.7	14
71	Interrupted: The roles of distributed effort and incubation in preventing fixation and generating problem solutions. Memory and Cognition, 2017, 45, 553-565.	0.9	14
72	Utilizing Markov Chains to Understand Operation Sequencing in Design Tasks. , 2017, , 401-418.		14

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73	A methodology for creating a statistically derived shape grammar composed of non-obvious shape chunks. Research in Engineering Design - Theory, Applications, and Concurrent Engineering, 2008, 18, 181-196.	1.2	13
74	Emergent Systems Energy Laws for Predicting Myosin Ensemble Processivity. PLoS Computational Biology, 2015, 11, e1004177.	1.5	13
75	A hybrid extended pattern search/genetic algorithm for multi-stage wind farm optimization. Optimization and Engineering, 2016, 17, 77-103.	1.3	13
76	Unlocking Organizational Potential: A Computational Platform for Investigating Structural Interdependence in Design. Journal of Mechanical Design, Transactions of the ASME, 2009, 131, .	1.7	12
77	Optimization of Wind Farm Layout and Wind Turbine Geometry Using a Multi-Level Extended Pattern Search Algorithm That Accounts for Variation in Wind Shear Profile Shape. , 2012, , .		11
78	Design of Complex Biologically Based Nanoscale Systems Using Multi-Agent Simulations and Structureâ€Behaviorâ€Function Representations. Journal of Mechanical Design, Transactions of the ASME, 2013, 135, .	1.7	11
79	Empirical Studies of Design Thinking: Past, Present, Future. , 2013, , .		11
80	Inducing constraint activity in innovative design. Artificial Intelligence for Engineering Design, Analysis and Manufacturing: AIEDAM, 1991, 5, 47-61.	0.7	10
81	The D3 Methodology: Bridging Science and Design for Bio-Based Product Development. Journal of Mechanical Design, Transactions of the ASME, 2016, 138, .	1.7	10
82	Goal-Directed Design Agents: Integrating Visual Imitation With One-Step Lookahead Optimization for Generative Design. Journal of Mechanical Design, Transactions of the ASME, 2021, 143, .	1.7	10
83	ACTIVITY ANALYSIS: SIMPLIFYING OPTIMAL DESIGN PROBLEMS THROUGH QUALITATIVE PARTITIONINGâ€. Engineering Optimization, 1996, 27, 109-137.	1.5	9
84	Automating the Creation of Shape Grammar Rules. , 2008, , 3-22.		9
85	Improving human understanding and design of complex multi-level systems with animation and parametric relationship supports. Design Science, 2015, 1, .	1.1	9
86	Data on the design of truss structures by teams of engineering students. Data in Brief, 2018, 18, 160-163.	0.5	9
87	A strategic decision-making architecture toward hybrid teams for dynamic competitive problems. Decision Support Systems, 2021, 144, 113490.	3.5	9
88	When Faced With Increasing Complexity: The Effectiveness of Artificial Intelligence Assistance for Drone Design. Journal of Mechanical Design, Transactions of the ASME, 2022, 144, .	1.7	9
89	Layout Optimization of Shapeable Components With Extended Pattern Search Applied to Transmission Design. Journal of Mechanical Design, Transactions of the ASME, 2004, 126, 188-191.	1.7	9
90	Input Variable Expansion: An algorithmic design generation technique. Research in Engineering Design - Theory, Applications, and Concurrent Engineering, 1992, 4, 101-113.	1.2	8

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91	Interagent ties in team-based computational configuration design. Artificial Intelligence for Engineering Design, Analysis and Manufacturing: AIEDAM, 2004, 18, 135-152.	0.7	8
92	Only as Strong as the Strongest Link: The Relative Contribution of Individual Team Member Proficiency in Configuration Design. Journal of Mechanical Design, Transactions of the ASME, 2021, 143, .	1.7	8
93	Data on the design and operation of drones by both individuals and teams. Data in Brief, 2021, 36, 107008.	0.5	8
94	Exploring the Effectiveness of Various Patterns in an Extended Pattern Search Layout Algorithm. Journal of Mechanical Design, Transactions of the ASME, 2004, 126, 22-28.	1.7	7
95	Cognitive-Based Search Strategies for Complex Bio-Nanotechnology Design Derived Through Symbiotic Human and Agent-Based Approaches. , 2014, , .		7
96	Exploring the Role of Interaction Effects in Visual Conjoint Analysis. Journal of Mechanical Design, Transactions of the ASME, 2015, 137, .	1.7	7
97	Impossible by design? Fairness, strategy, and Arrow's impossibility theorem. Design Science, 2017, 3, .	1.1	7
98	Design Strategy Transfer in Cognitively-Inspired Agents. , 2018, , .		7
99	Efficient probabilistic grammar induction for design. Artificial Intelligence for Engineering Design, Analysis and Manufacturing: AIEDAM, 2018, 32, 177-188.	0.7	7
100	Human and Computational Approaches for Design Problem-Solving. , 2016, , 187-205.		6
101	Heuristic-Guided Solution Search Through a Two-Tiered Design Grammar. Journal of Computing and Information Science in Engineering, 2020, 20, .	1.7	6
102	Data-Driven Heuristic Induction From Human Design Behavior. Journal of Computing and Information Science in Engineering, 2021, 21, .	1.7	6
103	Multi-Stage Optimization of Wind Farms With Limiting Factors. , 2013, , .		5
104	Data on the configuration design of internet-connected home cooling systems by engineering students. Data in Brief, 2017, 14, 773-776.	0.5	5
105	Robust mechanobiological behavior emerges in heterogeneous myosin systems. Proceedings of the National Academy of Sciences of the United States of America, 2017, 114, E8147-E8154.	3.3	5
106	Silence is golden: The effect of verbalization on group performance.. Journal of Experimental Psychology: General, 2018, 147, 939-944.	1.5	5
107	Taking the Guess Work Out of the Initial Guess: A Solution Interval Method for Least-Squares Parameter Estimation in Nonlinear Models. Journal of Computing and Information Science in Engineering, 2021, 21, .	1.7	5
108	Search Strategies in Evolutionary Multi-Agent Systems: The Effect of Cooperation and Reward on Solution Quality. Journal of Mechanical Design, Transactions of the ASME, 2011, 133, .	1.7	4

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109	Should Teams Collaborate During Conceptual Engineering Design? An Experimental Study. , 2018, , .		4
110	Inspired Internal Search: Using Neuroimaging to Understand Design Ideation and Concept Generation With Inspirational Stimuli. , 2018, , .		4
111	Exploring the Application of Network Analytics in Characterizing a Conceptual Design Space. Proceedings of the Design Society International Conference on Engineering Design, 2019, 1, 1953-1962.	0.6	4
112	Generating DNA Origami Nanostructures through Shape Annealing. Applied Sciences (Switzerland), 2021, 11, 2950.	1.3	4
113	The Influence of Process Management: Uncovering the Impact of Real-Time Managerial Interventions via a Topic Modeling Approach. Journal of Mechanical Design, Transactions of the ASME, 2021, 143, .	1.7	4
114	COMMUNICATION IN AI-ASSISTED TEAMS DURING AN INTERDISCIPLINARY DRONE DESIGN PROBLEM. Proceedings of the Design Society, 2021, 1, 651-660.	0.5	4
115	Tracking of Scalpel Motions With an Inertial Measurement Unit System. IEEE Sensors Journal, 2022, 22, 4651-4660.	2.4	4
116	The Meaning of "Near" and "Far": The Impact of Structuring Design Databases and the Effect of Distance of Analogy on Design Output. , 2012, , .		3
117	A Two-Tiered Grammatical Approach for Agent-Based Computational Design. , 2018, , .		3
118	Wisdom of Microcrowds in Evaluating Solutions to Esoteric Engineering Problems. Journal of Mechanical Design, Transactions of the ASME, 2019, 141, .	1.7	3
119	Written in Blood: Applying Shape Grammars to Retinal Vasculatures. Translational Vision Science and Technology, 2020, 9, 36.	1.1	3
120	Modeling Aggregate Choice for Form and Function Through Metaconjoint Analysis. Journal of Mechanical Design, Transactions of the ASME, 2014, 136, .	1.7	3
121	Data on the Human Versus artificial intelligence process management experiment. Data in Brief, 2022, 41, 107917.	0.5	3
122	Aligning Shape Rule Creation With Modular Design: Minimizing the Cost of Using Shape Grammars. , 2008, , .		2
123	Discovering Structure in Design Databases Through Functional and Surface Based Mapping. , 2011, , .		2
124	Testing the Basis for an Automated Design-by-Analogy Tool Through Comparison to Expert Thinking. , 2013, , .		2
125	Linking Properties of Design Problems to Optimal Team Characteristics. , 2016, , .		2
126	The facilitating role of task alternation on group idea generation.. Journal of Applied Research in Memory and Cognition, 2017, 6, 486-495.	0.7	2

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127	A look at the emerging science of innovation. Artificial Intelligence for Engineering Design, Analysis and Manufacturing: AIEDAM, 2007, 21, 13-14.	0.7	1
128	Understanding Innovation: A Study of Perspectives and Perceptions in Engineering. , 2011, , .		1
129	Studying Human Design Teams via Computational Teams of Simulated Annealing Agents. , 2015, , .		1
130	Determinants of creative thinking: the effect of task characteristics in solving remote associate test problems. Thinking and Reasoning, 2022, 28, 163-192.	2.1	1
131	Design Team Convergence: The Influence of Example Solution Quality. , 2009, , .		0
132	An Exploration of the Effects of Managerial Intervention on Engineering Design Team Performance. , 2019, , 613-629.		0
133	An Adversarial Agent-Based Design Method Using Stochastic Stackelberg Game Conditions. Journal of Mechanical Design, Transactions of the ASME, 2021, 143, .	1.7	0
134	Unsuccessful External Search: Using Neuroimaging to Understand Fruitless Periods of Design Ideation Involving Inspirational Stimuli. , 2019, , 37-54.		0
135	The Cognition of Engineering Design—An Opportunity of Impact. Cognitive Science, 2007, 31, 193-195.	0.8	0