Jacob Beal

List of Publications by Year
in descending order

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142 papers	3,770 citations	185998 28 h-index	182168 51 g-index
170 all docs	170 docs citations	170 times ranked	3038 citing authors

#	Article	IF	Citations
1	A Lyapunov Analysis of a Most Probable Path Finding Algorithm. , 2022, 6, 1052-1057.		0
2	Round Trip: An Automated Pipeline for Experimental Design, Execution, and Analysis. ACS Synthetic Biology, 2022, 11, 608-622.	1.9	8
3	Intent Parser: A Tool for Codification and Sharing of Experimental Design. ACS Synthetic Biology, 2022, 11, 502-507.	1.9	5
4	Meeting Measurement Precision Requirements for Effective Engineering of Genetic Regulatory Networks. ACS Synthetic Biology, 2022, 11, 1196-1207.	1.9	8
5	Simulation-Based Engineering of Time-Delayed Safety Switches for Safer Gene Therapies. ACS Synthetic Biology, 2022, 11, 1782-1789.	1.9	0
6	pySBOL3: SBOL3 for Python Programmers. ACS Synthetic Biology, 2022, 11, 2523-2526.	1.9	3
7	Incomplete Cell Sorting Creates Engineerable Structures with Long-Term Stability. Cell Reports Physical Science, 2021, 2, 100305.	2.8	5
8	Synthetic biology open language visual (SBOL Visual) version 2.3. Journal of Integrative Bioinformatics, 2021, 18, .	1.0	6
9	Comparative analysis of three studies measuring fluorescence from engineered bacterial genetic constructs. PLoS ONE, 2021, 16, e0252263.	1.1	11
10	Quantitative characterization of recombinase-based digitizer circuits enables predictable amplification of biological signals. Communications Biology, 2021, 4, 875.	2.0	9
11	Curation Principles Derived from the Analysis of the SBOL iGEM Data Set. ACS Synthetic Biology, 2021, 10, 2592-2606.	1.9	3
12	: A Processing Pipeline for Quantifying Cell Organization from Fluorescent Microscopy. Methods in Molecular Biology, 2021, 2258, 3-15.	0.4	1
13	Synthetic biology open language visual (SBOL visual) version 3.0. Journal of Integrative Bioinformatics, 2021, 18, .	1.0	3
14	Effect of Monotonic Filtering on Graph Collection Dynamics. , 2021, , .		1
15	Synthetic Biology Curation Tools (SYNBICT). ACS Synthetic Biology, 2021, 10, 3200-3204.	1.9	2
16	Robust estimation of bacterial cell count from optical density. Communications Biology, 2020, 3, 512.	2.0	86
17	The Synthetic Biology Open Language (SBOL) Version 3: Simplified Data Exchange for Bioengineering. Frontiers in Bioengineering and Biotechnology, 2020, 8, 1009.	2.0	40
18	Capturing Multicellular System Designs Using Synthetic Biology Open Language (SBOL). ACS Synthetic Biology, 2020, 9, 2410-2417.	1.9	1

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19	Improving Collection Dynamics by Monotonic Filtering. , 2020, , .		3
20	SBOL Visual 2 Ontology. ACS Synthetic Biology, 2020, 9, 972-977.	1.9	3
21	ShortBOL: A Language for Scripting Designs for Engineered Biological Systems Using Synthetic Biology Open Language (SBOL). ACS Synthetic Biology, 2020, 9, 962-966.	1.9	7
22	Organizing genome engineering for the gigabase scale. Nature Communications, 2020, 11, 689.	5.8	14
23	A Resilient Leader Election Algorithm Using Aggregate Computing Blocks. IFAC-PapersOnLine, 2020, 53, 3336-3341.	0.5	7
24	Synthetic biology open language visual (SBOL visual) version 2.2. Journal of Integrative Bioinformatics, 2020, 17, .	1.0	7
25	Synthetic biology open language (SBOL) version 3.0.0. Journal of Integrative Bioinformatics, 2020, 17, .	1.0	13
26	The long journey towards standards for engineering biosystems. EMBO Reports, 2020, 21, e50521.	2.0	46
27	Levels of autonomy in synthetic biology engineering. Molecular Systems Biology, 2020, 16, e10019.	3.2	13
28	Specifying Combinatorial Designs with the Synthetic Biology Open Language (SBOL). ACS Synthetic Biology, 2019, 8, 1519-1523.	1.9	2
29	Communicating Structure and Function in Synthetic Biology Diagrams. ACS Synthetic Biology, 2019, 8, 1818-1825.	1.9	30
30	Synthetic Biology Open Language Visual (SBOL Visual) Version 2.1. Journal of Integrative Bioinformatics, 2019, 16, .	1.0	8
31	Technological challenges and milestones for writing genomes. Science, 2019, 366, 310-312.	6.0	50
32	From distributed coordination to field calculus and aggregate computing. Journal of Logical and Algebraic Methods in Programming, 2019, 109, 100486.	0.4	44
33	High-performance chemical- and light-inducible recombinases in mammalian cells and mice. Nature Communications, 2019, 10, 4845.	5.8	47
34	Synthetic Biology Open Language (SBOL) Version 2.3. Journal of Integrative Bioinformatics, 2019, 16, .	1.0	16
35	Opportunities and Challenges in Applying Artificial Intelligence to Bioengineering. Computational Biology, 2019, , 425-452.	0.1	0
36	TASBE Flow Analytics: A Package for Calibrated Flow Cytometry Analysis. ACS Synthetic Biology, 2019, 8, 1524-1529.	1.9	21

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37	Robustness of the Adaptive Bellman â€“Ford Algorithm: Global Stability and Ultimate Bounds. IEEE Transactions on Automatic Control, 2019, 64, 4121-4136.	3.6	20
38	A Higher-Order Calculus of Computational Fields. ACM Transactions on Computational Logic, 2019, 20, 1-55.	0.7	55
39	Global Uniform Asymptotic Stability of a Generalized Adaptive Bellman-Ford Algorithm. , 2019, , .		1
40	The share Operator for Field-Based Coordination. Lecture Notes in Computer Science, 2019, , 54-71.	1.0	3
41	Engineering Resilient Collective Adaptive Systems by Self-Stabilisation. ACM Transactions on Modeling and Computer Simulation, 2018, 28, 1-28.	0.6	68
42	Robust Stability of Spreading Blocks in Aggregate Computing. , 2018, , .		3
43	An Aggregate Computing Approach to Self-Stabilizing Leader Election. , 2018, , .		8
44	Synthetic Biology Open Language (SBOL) Version 2.2.0. Journal of Integrative Bioinformatics, 2018, 15, .	1.0	20
45	Small-molecule-based regulation of RNA-delivered circuits in mammalian cells. Nature Chemical Biology, 2018, 14, 1043-1050.	3.9	52
46	Engineering modular intracellular protein sensor-actuator devices. Nature Communications, 2018, 9, 1881.	5.8	51
47	Adaptive Opportunistic Airborne Sensor Sharing. ACM Transactions on Autonomous and Adaptive Systems, 2018, 13, 1-29.	0.4	12
48	Quantification of bacterial fluorescence using independent calibrants. PLoS ONE, 2018, 13, e0199432.	1.1	66
49	Synthetic Biology Open Language Visual (SBOL Visual) Version 2.0. Journal of Integrative Bioinformatics, 2018, 15, .	1.0	21
50	Time to Get Serious about Measurement in Synthetic Biology. Trends in Biotechnology, 2018, 36, 869-871.	4.9	22
51	From Field-Based Coordination to Aggregate Computing. Lecture Notes in Computer Science, 2018, , 252-279.	1.0	15
52	Space-Time Universality of Field Calculus. Lecture Notes in Computer Science, 2018, , 1-20.	1.0	16
53	Amorphous Computing. , 2018, , 601-617.		0
54	A Visual Language for Protein Design. ACS Synthetic Biology, 2017, 6, 1120-1123.	1.9	2

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55	A standard-enabled workflow for synthetic biology. Biochemical Society Transactions, 2017, 45, 793-803.	1.6	38
56	Towards a Foundational API for Resilient Distributed Systems Design. , 2017, , .		8
57	Self-Adaptation to Device Distribution in the Internet of Things. ACM Transactions on Autonomous and Adaptive Systems, 2017, 12, 1-29.	0.4	29
58	Error in Self-Stabilizing Spanning-Tree Estimation of Collective State. , 2017, , .		7
59	Practical Aggregate Programming with Protelis. , 2017, , .		2
60	Biochemical complexity drives logâ€normal variation in genetic expression. Engineering Biology, 2017, 1, 55-60.	0.8	64
61	Reducing DNA context dependence in bacterial promoters. PLoS ONE, 2017, 12, e0176013.	1.1	37
62	Amorphous Computing. , 2017, , 1-18.		0
63	Synthetic Biology Open Language (SBOL) Version 2.1.0. Journal of Integrative Bioinformatics, 2016, 13, .	1.0	11
64	Reproducibility of Fluorescent Expression from Engineered Biological Constructs in E. coli. PLoS ONE, 2016, 11, e0150182.	1.1	33
65	A Lyapunov analysis for the robust stability of an adaptive Bellman-Ford algorithm. , 2016, , .		11
66	Combining Self-Organisation and Autonomic Computing in CASs with Aggregate-MAPE. , 2016, , .		7
67	Self-Adaptation to Device Distribution Changes. , 2016, , .		15
68	libSBOLj 2.0: A Java Library to Support SBOL 2.0. IEEE Life Sciences Letters, 2016, , 1-1.	1.2	0
69	Sharing Structure and Function in Biological Design with SBOL 2.0. ACS Synthetic Biology, 2016, 5, 498-506.	1.9	88
70	Improving Synthetic Biology Communication: Recommended Practices for Visual Depiction and Digital Submission of Genetic Designs. ACS Synthetic Biology, 2016, 5, 449-451.	1.9	22
71	Managing bioengineering complexity with AI techniques. BioSystems, 2016, 148, 40-46.	0.9	5
72	Improving Gossip Dynamics Through Overlapping Replicates. Lecture Notes in Computer Science, 2016, , 192-207.	1.0	15

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73	A type-sound calculus of computational fields. Science of Computer Programming, 2016, 117, 17-44.	1.5	27
74	CIDAR MoClo: Improved MoClo Assembly Standard and New E. coli Part Library Enable Rapid Combinatorial Design for Synthetic and Traditional Biology. ACS Synthetic Biology, 2016, 5, 99-103.	1.9	156
75	Aggregate Programming: From Foundations to Applications. Lecture Notes in Computer Science, 2016, , 233-260.	1.0	5
76	libSBOLj 2.0: A Java Library to Support SBOL 2.0. IEEE Life Sciences Letters, 2015, 1, 34-37.	1.2	24
77	Synthetic Biology Open Language (SBOL) Version 2.0.0. Journal of Integrative Bioinformatics, 2015, 12, 902-991.	1.0	22
78	Bridging the Gap: A Roadmap to Breaking the Biological Design Barrier. Frontiers in Bioengineering and Biotechnology, 2015, 2, 87.	2.0	20
79	Signal-to-Noise Ratio Measures Efficacy of Biological Computing Devices and Circuits. Frontiers in Bioengineering and Biotechnology, 2015, 3, 93.	2.0	21
80	Superdiffusive Dispersion and Mixing of Swarms. ACM Transactions on Autonomous and Adaptive Systems, 2015, 10, 1-24.	0.4	9
81	Model-Driven Engineering of Gene Expression from RNA Replicons. ACS Synthetic Biology, 2015, 4, 48-56.	1.9	34
82	Spaceâ€“time programming. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2015, 373, 20140220.	1.6	18
83	Formal foundations of sensor network applications. SIGSPATIAL Special, 2015, 7, 36-42.	2.5	1
84	Aggregate Programming for the Internet of Things. Computer, 2015, 48, 22-30.	1.2	138
85	Efficient Engineering of Complex Self-Organising Systems by Self-Stabilising Fields. , 2015, , .		33
86	Distributed Recovery for Enterprise Services. , 2015, , .		7
87	Protelis. , 2015, , .		76
88	Cas9 gRNA engineering for genome editing, activation and repression. Nature Methods, 2015, 12, 1051-1054.	9.0	272
89	Toward Predicting Distributed Systems Dynamics. , 2015, , .		6
90	Proposed Data Model for the Next Version of the Synthetic Biology Open Language. ACS Synthetic Biology, 2015, 4, 57-71.	1.9	19

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91	Accurate Predictions of Genetic Circuit Behavior from Part Characterization and Modular Composition. ACS Synthetic Biology, 2015, 4, 673-681.	1.9	62
92	Code Mobility Meets Self-organisation: A Higher-Order Calculus of Computational Fields. Lecture Notes in Computer Science, 2015, , 113-128.	1.0	27
93	SBOL Visual: A Graphical Language for Genetic Designs. PLoS Biology, 2015, 13, e1002310.	2.6	73
94	Building Blocks for Aggregate Programming of Self-Organising Applications. , 2014, , .		38
95	Predictable Self-Organization with Computational Fields. , 2014, , .		0
96	CRISPR transcriptional repression devices and layered circuits in mammalian cells. Nature Methods, 2014, 11, 723-726.	9.0	280
97	The Synthetic Biology Open Language (SBOL) provides a community standard for communicating designs in synthetic biology. Nature Biotechnology, 2014, 32, 545-550.	9.4	247
98	Web Proto: Aggregate Programming for Everyone. , 2013, , .		1
99	Precise Mass-Market Energy Demand Management Through Stochastic Distributed Computing. IEEE Transactions on Smart Grid, 2013, 4, 2017-2027.	6.2	21
100	Operational semantics of proto. Science of Computer Programming, 2013, 78, 633-656.	1.5	10
101	Functional synthesis of genetic regulatory networks. , 2013, , .		0
102	QuaFL. , 2013, , .		11
103	Mixed geometric-topological representation for electromechanical design. , 2013, , .		1
104	Spatial Computing Meets Realistic Mobile Wireless Problems. , 2013, , .		0
105	Superdiffusive Dispersion and Mixing of Swarms with Reactive Levy Walks. , 2013, , .		8
106	On the Evaluation of Space-Time Functions. Computer Journal, 2013, 56, 1500-1517.	1.5	8
107	A Calculus of Computational Fields. Communications in Computer and Information Science, 2013, , 114-128.	0.4	24
108	A manifold operator representation for adaptive design. , 2012, , .		4

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109	Self-Stabilizing Robot Team Formation with Proto: IEEE Self-Adaptive and Self-Organizing Systems 2012 Demo Entry. , 2012, , .		1
110	Fast Precise Distributed Control for Energy Demand Management. , 2012, , .		15
111	A Dimensionless Graceful Degradation Metric for Quantifying Resilience. , 2012, , .		1
112	An End-to-End Workflow for Engineering of Biological Networks from High-Level Specifications. ACS Synthetic Biology, 2012, 1, 317-331.	1.9	88
113	Automated Selection of Synthetic Biology Parts for Genetic Regulatory Networks. ACS Synthetic Biology, 2012, 1, 332-344.	1.9	52
114	Linda in Space-Time: An Adaptive Coordination Model for Mobile Ad-Hoc Environments. Lecture Notes in Computer Science, 2012, , 212-229.	1.0	24
115	Functional Blueprints: An Approach to Modularity in Grown Systems. Understanding Complex Systems, 2012, , 313-329.	0.3	1
116	AmorphousAmorphous computing ComputingComputing amorphous. , 2012, , 147-160.		0
117	Bridging Biology and Engineering Together with Spatial Computing. Lecture Notes in Computer Science, 2012, , 14-18.	1.0	1
118	On the Evaluation of Space-Time Functions. , 2011, , .		1
119	Using Morphogenetic Models to Develop Spatial Structures. , 2011, , .		7
120	High-Level Programming Languages for Biomolecular Systems. , 2011, , 225-252.		11
121	Functional blueprints: an approach to modularity in grown systems. Swarm Intelligence, 2011, 5, 257-281.	1.3	11
122	Core operational semantics of Proto. , 2011, , .		10
123	An agent framework for agent societies. , 2011, , .		1
124	Spatial Computing. ACM Transactions on Autonomous and Adaptive Systems, 2011, 6, 1-3.	0.4	12
125	Automatic Compilation from High-Level Biologically-Oriented Programming Language to Genetic Regulatory Networks. PLoS ONE, 2011, 6, e22490.	1.1	87
126	Composable continuous-space programs for robotic swarms. Neural Computing and Applications, 2010, 19, 825-847.	3.2	69

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127	Reaction Factoring and Bipartite Update Graphs Accelerate the Gillespie Algorithm for Large-Scale Biochemical Systems. PLoS ONE, 2010, 5, e8125.	1.1	17
128	Dynamically Defined Processes for Spatial Computers. , 2010, , .		5
129	Adjustable autonomy for cross-domain entitlement decisions. , 2010, , .		2
130	Distributed Control for Small Customer Energy Demand Management. , 2010, , .		18
131	A Basis Set of Operators for Space-Time Computations. , 2010, , .		14
132	Functional Blueprints: An Approach to Modularity in Grown Systems. Lecture Notes in Computer Science, 2010, , 179-190.	1.0	7
133	Flexible self-healing gradients. , 2009, , .		27
134	Fast Self-stabilization for Gradients. Lecture Notes in Computer Science, 2009, , 15-27.	1.0	5
135	Empirical Characterization of Discretization Error in Gradient-Based Algorithms. , 2008, , .		6
136	Fast self-healing gradients. , 2008, , .		43
137	Cells Are Plausible Targets for High-Level Spatial Languages. , 2008, , .		15
138	Analyzing composability in a sparse encoding model of memorization and association. , 2008, , .		5
139	Cognitive security for personal devices. , 2008, , .		24
140	Continuous Space-Time Semantics Allow Adaptive Program Execution. , 2007, , .		17
141	Organizing the Aggregate. , 0, , 436-501.		61
142	Resiliency with Aggregate Computing: State of the Art and Roadmap. Electronic Proceedings in Theoretical Computer Science, EPTCS, 0, 217, 5-18.	0.8	1