Daniel Goldman

List of Publications by Year
in descending order

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126 papers	5,933 citations	76326 40 h-index	85541 71 g-index
140 all docs	140 docs citations	140 times ranked	3420 citing authors

#	Article	IF	Citations
1	Comparative study of snake lateral undulation kinematics in model heterogeneous terrain. Integrative and Comparative Biology, 2023, 63, 198-208.	2.0	11
2	Bio-inspired geotechnical engineering: principles, current work, opportunities and challenges. Geotechnique, 2022, 72, 687-705.	4.0	74
3	Lateral bending and buckling aids biological and robotic earthworm anchoring and locomotion. Bioinspiration and Biomimetics, 2022, 17, 016001.	2.9	13
4	Construction and Excavation by Collaborative Double-Tailed SAW Robots. IEEE Robotics and Automation Letters, 2022, 7, 3742-3748.	5.1	3
5	Robots as models of evolving systems. Proceedings of the National Academy of Sciences of the United States of America, 2022, 119, e2120019119.	7.1	10
6	A general locomotion control framework for multi-legged locomotors. Bioinspiration and Biomimetics, 2022, 17, 046015.	2.9	11
7	Generalized Omega Turn Gait Enables Agile Limbless Robot Turning in Complex Environments. , 2022, , .		3
8	Oxygenation-Controlled Collective Dynamics in Aquatic Worm Blobs. Integrative and Comparative Biology, 2022, 62, 890-896.	2.0	10
9	Coordinating tiny limbs and long bodies: Geometric mechanics of lizard terrestrial swimming. Proceedings of the National Academy of Sciences of the United States of America, 2022, 119, .	7.1	11
10	Learning Terrain Dynamics: A Gaussian Process Modeling and Optimal Control Adaptation Framework Applied to Robotic Jumping. IEEE Transactions on Control Systems Technology, 2021, 29, 1581-1596.	5.2	7
11	Coordination of lateral body bending and leg movements for sprawled posture quadrupedal locomotion. International Journal of Robotics Research, 2021, 40, 747-763.	8.5	15
12	Low rattling: A predictive principle for self-organization in active collectives. Science, 2021, 371, 90-95.	12.6	44
13	Functional consequences of convergently evolved microscopic skin features on snake locomotion. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	7.1	17
14	Collective dynamics in entangled worm and robot blobs. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	7.1	46
15	Mechanism and function of root circumnutation. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	7.1	45
16	Emergent Field-Driven Robot Swarm States. Physical Review Letters, 2021, 126, 108002.	7.8	44
17	Reconstruction of Backbone Curves for Snake Robots. IEEE Robotics and Automation Letters, 2021, 6, 3264-3270.	5.1	12
18	Surprising simplicity in the modeling of dynamic granular intrusion. Science Advances, 2021, 7, .	10.3	30

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19	Programming active cohesive granular matter with mechanically induced phase changes. Science Advances, 2021, 7, .	10.3	26
20	Controlling subterranean forces enables a fast, steerable, burrowing soft robot. Science Robotics, 2021, 6, .	17.6	75
21	Self-reconfigurable multilegged robot swarms collectively accomplish challenging terradynamic tasks. Science Robotics, 2021, 6, .	17.6	46
22	Effect of two parallel intruders on total work during granular penetrations. Physical Review E, 2021, 104, 024902.	2.1	7
23	Frequency modulation of body waves to improve performance of sidewinding robots. International Journal of Robotics Research, 2021, 40, 1547-1562.	8.5	16
24	Emergent Collective Locomotion in an Active Polymer Model of Entangled Worm Blobs. Frontiers in Physics, 2021, 9, .	2.1	13
25	A minimal robophysical model of quadriflagellate self-propulsion. Bioinspiration and Biomimetics, 2021, 16, 066001.	2.9	9
26	Efficacy of simple continuum models for diverse granular intrusions. Soft Matter, 2021, 17, 7196-7209.	2.7	9
27	Air-Fluidized Aggregates of Black Soldier fly Larvae. Frontiers in Physics, 2021, 9, .	2.1	4
28	Stretchable Nanocomposite Sensors, Nanomembrane Interconnectors, and Wireless Electronics toward Feedbackâ€“Loop Control of a Soft Earthworm Robot. ACS Applied Materials & Interfaces, 2020, 12, 43388-43397.	8.0	35
29	Material remodeling and unconventional gaits facilitate locomotion of a robophysical rover over granular terrain. Science Robotics, 2020, 5, .	17.6	40
30	A systematic approach to creating terrain-capable hybrid soft/hard myriapod robots. , 2020, , .		13
31	Surprising simplicities and syntheses in limbless self-propulsion in sand. Journal of Experimental Biology, 2020, 223, .	1.7	29
32	Robophysical Modeling of Bilaterally Activated and Soft Limbless Locomotors. Lecture Notes in Computer Science, 2020, , 300-311.	1.3	8
33	Side-impact collision: mechanics of obstacle negotiation in sidewinding snakes. Bioinspiration and Biomimetics, 2020, 15, 065005.	2.9	12
34	Mitigating memory effects during undulatory locomotion on hysteretic materials. ELife, 2020, 9, .	6.0	23
35	Nutation Aids Heterogeneous Substrate Exploration in a Robophysical Root. , 2019, , .		12
36	Modeling of the interaction of rigid wheels with dry granular media. Journal of Terramechanics, 2019, 85, 1-14.	3.1	31

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37	Kirigami Skin Improves Soft Earthworm Robot Anchoring and Locomotion Under Cohesive Soil. , 2019, , .		25
38	A robot made of robots: Emergent transport and control of a smarticle ensemble. Science Robotics, 2019, 4, .	17.6	53
39	Fast, versatile and quantitative annotation of complex images. BioTechniques, 2019, 66, 269-275.	1.8	5
40	Mechanical diffraction reveals the role of passive dynamics in a slithering snake. Proceedings of the National Academy of Sciences of the United States of America, 2019, 116, 4798-4803.	7.1	42
41	Dynamics of scattering in undulatory active collisions. Physical Review E, 2019, 99, 022606.	2.1	13
42	Physics approaches to natural locomotion: Every robot is an experiment. , 2019, , 109-127.		24
43	Bipedial Locomotion Up Sandy Slopes: Systematic Experiments Using Zero Moment Point Methods. , 2018, , .		1
44	Soft Robotic Burrowing Device with Tip-Extension and Granular Fluidization. , 2018, , .		33
45	Phototactic supersmarticles. Artificial Life and Robotics, 2018, 23, 459-468.	1.2	10
46	Locomoting Robots Composed of Immobile Robots. , 2018, , .		2
47	Design of a soft robophysical earthworm model. , 2018, , .		13
48	Collective clog control: Optimizing traffic flow in confined biological and robophysical excavation. Science, 2018, 361, 672-677.	12.6	42
49	Learning to jump in granular media: Unifying optimal control synthesis with Gaussian process-based regression. , 2017, , .		12
50	A stability region criterion for flat-footed bipedal walking on deformable granular terrain. , 2017, , .		15
51	Geometric Mechanics Applied to Tetrapod Locomotion on Granular Media. Lecture Notes in Computer Science, 2017, , 595-603.	1.3	8
52	Collisional Diffraction Emerges from Simple Control of Limbless Locomotion. Lecture Notes in Computer Science, 2017, , 611-618.	1.3	3
53	Entangled Granular Media. , 2016, , 341-354.		3
54	Tail use improves performance on soft substrates in models of early vertebrate land locomotors. Science, 2016, 353, 154-158.	12.6	78

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55	Tractable terrain-aware motion planning on granular media: An impulsive jumping study. , 2016, , .		26
56	A review on locomotion robophysics: the study of movement at the intersection of robotics, soft matter and dynamical systems. Reports on Progress in Physics, 2016, 79, 110001.	20.1	197
57	Robophysical study of excavation in confined environments. Artificial Life and Robotics, 2016, 21, 460-465.	1.2	4
58	X-Ray Computed Tomography Reveals the Response of Root System Architecture to Soil Texture. Plant Physiology, 2016, 171, 2028-2040.	4.8	87
59	Robophysical study of jumping dynamics on granular media. Nature Physics, 2016, 12, 278-283.	16.7	81
60	Kinematic gait synthesis for snake robots. International Journal of Robotics Research, 2016, 35, 100-113.	8.5	45
61	Locomotor benefits of being a slender and slick sand-swimmer. Journal of Experimental Biology, 2015, 218, 440-50.	1.7	57
62	Limbless locomotors that turn in place. , 2015, , .		10
63	Controlled preparation of wet granular media reveals limits to lizard burial ability. Physical Biology, 2015, 12, 046009.	1.8	38
64	Behavioral and mechanical determinants of collective subsurface nest excavation. Journal of Experimental Biology, 2015, 218, 1295-1305.	1.7	44
65	Glass-like dynamics in confined and congested ant traffic. Soft Matter, 2015, 11, 6552-6561.	2.7	37
66	Anticipatory control using substrate manipulation enables trajectory control of legged locomotion on heterogeneous granular media. , 2015, , .		6
67	Robot-inspired biology: The compound-wave control template. , 2015, , .		7
68	Principles of appendage design in robots and animals determining terradynamic performance on flowable ground. Bioinspiration and Biomimetics, 2015, 10, 056014.	2.9	46
69	Modulation of orthogonal body waves enables high maneuverability in sidewinding locomotion. Proceedings of the National Academy of Sciences of the United States of America, 2015, 112, 6200-6205.	7.1	78
70	Beneath Our Feet: Strategies for Locomotion in Granular Media. Annual Review of Fluid Mechanics, 2015, 47, 431-453.	25.0	81
71	Force and flow at the onset of drag in plowed granular media. Physical Review E, 2014, 89, 042202.	2.1	34
72	Effect of volume fraction on granular avalanche dynamics. Physical Review E, 2014, 90, 032202.	2.1	37

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73	The effectiveness of resistive force theory in granular locomotion. Physics of Fluids, 2014, 26, .	4.0	88
74	Colloquium: Biophysical principles of undulatory self-propulsion in granular media. Reviews of Modern Physics, 2014, 86, 943-958.	45.6	25
75	Sidewinding with minimal slip: Snake and robot ascent of sandy slopes. Science, 2014, 346, 224-229.	12.6	209
76	Geometric Visualization of Self-Propulsion in a Complex Medium. Physical Review Letters, 2013, 110, 078101.	7.8	63
77	Swimming in the desert. Physics Today, 2013, 66, 68-69.	0.3	3
78	Ground fluidization promotes rapid running of a lightweight robot. International Journal of Robotics Research, 2013, 32, 859-869.	8.5	30
79	Climbing, falling, and jamming during ant locomotion in confined environments. Proceedings of the National Academy of Sciences of the United States of America, 2013, 110, 9746-9751.	7.1	34
80	Environmental interaction influences muscle activation strategy during sand-swimming in the sandfish lizard Scincus scincus. Journal of Experimental Biology, 2013, 216, 260-274.	1.7	35
81	A Terradynamics of Legged Locomotion on Granular Media. Science, 2013, 339, 1408-1412.	12.6	339
82	Flipper-driven terrestrial locomotion of a sea turtle-inspired robot. Bioinspiration and Biomimetics, 2013, 8, 026007.	2.9	61
83	Emergence of the advancing neuromechanical phase in a resistive force dominated medium. Proceedings of the National Academy of Sciences of the United States of America, 2013, 110, 10123-10128.	7.1	29
84	AN AUTOMATED SYSTEM FOR SYSTEMATIC TESTING OF LOCOMOTION ON HETEROGENEOUS GRANULAR MEDIA. , 2013, , .		10
85	Mechanics of Undulatory Swimming in a Frictional Fluid. PLoS Computational Biology, 2012, 8, e1002810.	3.2	49
86	Effects of worker size on the dynamics of fire ant tunnel construction. Journal of the Royal Society Interface, 2012, 9, 3312-3322.	3.4	26
87	Lift-Off Dynamics in a Simple Jumping Robot. Physical Review Letters, 2012, 109, 174301.	7.8	22
88	Toward a Terramechanics for Bio-Inspired Locomotion in Granular Environments. , 2012, , .		0
89	Using Computational and Mechanical Models to Study Animal Locomotion. Integrative and Comparative Biology, 2012, 52, 553-575.	2.0	42
90	Multi-functional foot use during running in the zebra-tailed lizard (Callisaurus draconoides). Journal of Experimental Biology, 2012, 215, 3293-308.	1.7	64

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91	Entangled Granular Media. Physical Review Letters, 2012, 108, 208001.	7.8	101
92	Comparative Studies Reveal Principles of Movement on and Within Granular Media. The IMA Volumes in Mathematics and Its Applications, 2012, , 281-292.	0.5	2
93	GEOMETRIC MECHANICS FOR SAND-SWIMMING. , 2012, , 705-712.		1
94	Granular lift forces predict vertical motion of a sand-swimming robot. , 2011, , .		21
95	Drag Induced Lift in Granular Media. Physical Review Letters, 2011, 106, 028001.	7.8	116
96	Mechanical models of sandfish locomotion reveal principles of high performance subsurface sand-swimming. Journal of the Royal Society Interface, 2011, 8, 1332-1345.	3.4	149
97	Undulatory swimming in sand: experimental and simulation studies of a robotic sandfish. International Journal of Robotics Research, 2011, 30, 793-805.	8.5	72
98	The Effect of Limb Kinematics on the Speed of a Legged Robot on Granular Media. Experimental Mechanics, 2010, 50, 1383-1393.	2.0	32
99	Utilization of granular solidification during terrestrial locomotion of hatchling sea turtles. Biology Letters, 2010, 6, 398-401.	2.3	50
100	Force and Flow Transition in Plowed Granular Media. Physical Review Letters, 2010, 105, 128301.	7.8	103
101	Systematic study of the performance of small robots on controlled laboratory substrates. Proceedings of SPIE, 2010, , .	0.8	18
102	Granular impact and the critical packing state. Physical Review E, 2010, 82, 010301.	2.1	108
103	Undulatory Swimming in Sand: Subsurface Locomotion of the Sandfish Lizard. Science, 2009, 325, 314-318.	12.6	338
104	Sensitive dependence of the motion of a legged robot on granular media. Proceedings of the National Academy of Sciences of the United States of America, 2009, 106, 3029-3034.	7.1	164
105	Scaling and dynamics of sphere and disk impact into granular media. Physical Review E, 2008, 77, 021308.	2.1	188
106	Active tails enhance arboreal acrobatics in geckos. Proceedings of the National Academy of Sciences of the United States of America, 2008, 105, 4215-4219.	7.1	199
107	Distributed mechanical feedback in arthropods and robots simplifies control of rapid running on challenging terrain. Bioinspiration and Biomimetics, 2007, 2, 9-18.	2.9	142
108	Dynamics of rapid vertical climbing in cockroaches reveals a template. Journal of Experimental Biology, 2006, 209, 2990-3000.	1.7	179

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109	Signatures of Glass Formation in a Fluidized Bed of Hard Spheres. Physical Review Letters, 2006, 96, 145702.	7.8	46
110	Low density fragile states in cohesive powders. American Journal of Physics, 2006, 74, 720-721.	0.7	7
111	Stationary state volume fluctuations in a granular medium. Physical Review E, 2005, 71, 030301.	2.1	161
112	Stages of relaxation of patterns and the role of stochasticity in the final stage. Nonlinearity, 2004, 17, 1535-1546.	1.4	6
113	Crucial role of sidewalls in velocity distributions in quasi-two-dimensional granular gases. Physical Review E, 2004, 70, 040301.	2.1	48
114	Mach cone in a shallow granular fluid. Physical Review E, 2004, 70, 060301.	2.1	30
115	Noise, Coherent Fluctuations, and the Onset of Order in an Oscillated Granular Fluid. Physical Review Letters, 2004, 92, 174302.	7.8	39
116	Dynamics of Drag and Force Distributions for Projectile Impact in a Granular Medium. Physical Review Letters, 2004, 92, 194301.	7.8	139
117	Lattice Dynamics and Melting of a Nonequilibrium Pattern. Physical Review Letters, 2003, 90, 104302.	7.8	35
118	Kink-Induced Transport and Segregation in Oscillated Granular Layers. Physical Review Letters, 2003, 91, 134301.	7.8	19
119	Emergence of order in an oscillated granular layer. Physica A: Statistical Mechanics and Its Applications, 2002, 306, 180-188.	2.6	8
120	Phase bubbles and spatiotemporal chaos in granular patterns. Physical Review E, 2001, 65, 011301.	2.1	59
121	The dynamics of legged locomotion in heterogeneous terrain: universality in scattering and sensitivity to initial conditions. , 0, , .		7
122	Simplifying Gait Design via Shape Basis Optimization. , 0, , .		18
123	Geometric Swimming on a Granular Surface. , 0, , .		21
124	Coordination of back bending and leg movements for quadrupedal locomotion. , 0, , .		33
125	Frequency Modulation of Body Waves to Improve Performance of Limbless Robots. , 0, , .		1
126	Toward Task Capable Active Matter: Learning to Avoid Clogging in Confined Collectives via Collisions. Frontiers in Physics, 0, 10, .	2.1	3