Daniel Goldman

List of Publications by Year
in descending order

Source: https://exaly.com/author-pdf/5724234/publications.pdf

Version: 2024-02-01

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	A Terradynamics of Legged Locomotion on Granular Media. Science, 2013, 339, 1408-1412.	12.6	339
2	Undulatory Swimming in Sand: Subsurface Locomotion of the Sandfish Lizard. Science, 2009, 325, 314-318.	12.6	338
3	Sidewinding with minimal slip: Snake and robot ascent of sandy slopes. Science, 2014, 346, 224-229.	12.6	209
4	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
5	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
6	Scaling and dynamics of sphere and disk impact into granular media. Physical Review E, 2008, 77, 021308.	2.1	188
7	Dynamics of rapid vertical climbing in cockroaches reveals a template. Journal of Experimental Biology, 2006, 209, 2990-3000.	1.7	179
8	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
9	Stationary state volume fluctuations in a granular medium. Physical Review E, 2005, 71, 030301.	2.1	161
10	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
11	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
12	Dynamics of Drag and Force Distributions for Projectile Impact in a Granular Medium. Physical Review Letters, 2004, 92, 194301.	7.8	139
13	Drag Induced Lift in Granular Media. Physical Review Letters, 2011, 106, 028001.	7.8	116
14	Granular impact and the critical packing state. Physical Review E, 2010, 82, 010301.	2.1	108
15	Force and Flow Transition in Plowed Granular Media. Physical Review Letters, 2010, 105, 128301.	7.8	103
16	Entangled Granular Media. Physical Review Letters, 2012, 108, 208001.	7.8	101
17	The effectiveness of resistive force theory in granular locomotion. Physics of Fluids, 2014, 26, .	4.0	88
18	X-Ray Computed Tomography Reveals the Response of Root System Architecture to Soil Texture. Plant Physiology, 2016, 171, 2028-2040.	4.8	87

#	Article	IF	Citations
19	Beneath Our Feet: Strategies for Locomotion in Granular Media. Annual Review of Fluid Mechanics, 2015, 47, 431-453.	25.0	81
20	Robophysical study of jumping dynamics on granular media. Nature Physics, 2016, 12, 278-283.	16.7	81
21	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
22	Tail use improves performance on soft substrates in models of early vertebrate land locomotors. Science, 2016, 353, 154-158.	12.6	78
23	Controlling subterranean forces enables a fast, steerable, burrowing soft robot. Science Robotics, 2021, 6, .	17.6	75
24	Bio-inspired geotechnical engineering: principles, current work, opportunities and challenges. Geotechnique, 2022, 72, 687-705.	4.0	74
25	Undulatory swimming in sand: experimental and simulation studies of a robotic sandfish. International Journal of Robotics Research, 2011, 30, 793-805.	8.5	72
26	Multi-functional foot use during running in the zebra-tailed lizard (Callisaurus draconoides). Journal of Experimental Biology, 2012, 215, 3293-308.	1.7	64
27	Geometric Visualization of Self-Propulsion in a Complex Medium. Physical Review Letters, 2013, 110, 078101.	7.8	63
28	Flipper-driven terrestrial locomotion of a sea turtle-inspired robot. Bioinspiration and Biomimetics, 2013, 8, 026007.	2.9	61
29	Phase bubbles and spatiotemporal chaos in granular patterns. Physical Review E, 2001, 65, 011301.	2.1	59
30	Locomotor benefits of being a slender and slick sand-swimmer. Journal of Experimental Biology, 2015, 218, 440-50.	1.7	57
31	A robot made of robots: Emergent transport and control of a smarticle ensemble. Science Robotics, 2019, 4, .	17.6	53
32	Utilization of granular solidification during terrestrial locomotion of hatchling sea turtles. Biology Letters, 2010, 6, 398-401.	2.3	50
33	Mechanics of Undulatory Swimming in a Frictional Fluid. PLoS Computational Biology, 2012, 8, e1002810.	3.2	49
34	Crucial role of sidewalls in velocity distributions in quasi-two-dimensional granular gases. Physical Review E, 2004, 70, 040301.	2.1	48
35	Signatures of Glass Formation in a Fluidized Bed of Hard Spheres. Physical Review Letters, 2006, 96, 145702.	7.8	46
36	Principles of appendage design in robots and animals determining terradynamic performance on flowable ground. Bioinspiration and Biomimetics, 2015, 10, 056014.	2.9	46

#	Article	IF	Citations
37	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
38	Self-reconfigurable multilegged robot swarms collectively accomplish challenging terradynamic tasks. Science Robotics, 2021, 6, .	17.6	46
39	Kinematic gait synthesis for snake robots. International Journal of Robotics Research, 2016, 35, 100-113.	8.5	45
40	Mechanism and function of root circumnutation. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	7.1	45
41	Behavioral and mechanical determinants of collective subsurface nest excavation. Journal of Experimental Biology, 2015, 218, 1295-1305.	1.7	44
42	Low rattling: A predictive principle for self-organization in active collectives. Science, 2021, 371, 90-95.	12.6	44
43	Emergent Field-Driven Robot Swarm States. Physical Review Letters, 2021, 126, 108002.	7.8	44
44	Using Computational and Mechanical Models to Study Animal Locomotion. Integrative and Comparative Biology, 2012, 52, 553-575.	2.0	42
45	Collective clog control: Optimizing traffic flow in confined biological and robophysical excavation. Science, 2018, 361, 672-677.	12.6	42
46	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
47	Material remodeling and unconventional gaits facilitate locomotion of a robophysical rover over granular terrain. Science Robotics, 2020, 5, .	17.6	40
48	Noise, Coherent Fluctuations, and the Onset of Order in an Oscillated Granular Fluid. Physical Review Letters, 2004, 92, 174302.	7.8	39
49	Controlled preparation of wet granular media reveals limits to lizard burial ability. Physical Biology, 2015, 12, 046009.	1.8	38
50	Effect of volume fraction on granular avalanche dynamics. Physical Review E, 2014, 90, 032202.	2.1	37
51	Glass-like dynamics in confined and congested ant traffic. Soft Matter, 2015, 11, 6552-6561.	2.7	37
52	Lattice Dynamics and Melting of a Nonequilibrium Pattern. Physical Review Letters, 2003, 90, 104302.	7.8	35
53	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
54	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

#	Article	IF	Citations
55	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
56	Force and flow at the onset of drag in plowed granular media. Physical Review E, 2014, 89, 042202.	2.1	34
57	Soft Robotic Burrowing Device with Tip-Extension and Granular Fluidization. , 2018, , .		33
58	Coordination of back bending and leg movements for quadrupedal locomotion. , 0, , .		33
59	The Effect of Limb Kinematics on the Speed of a Legged Robot on Granular Media. Experimental Mechanics, 2010, 50, 1383-1393.	2.0	32
60	Modeling of the interaction of rigid wheels with dry granular media. Journal of Terramechanics, 2019, 85, 1-14.	3.1	31
61	Mach cone in a shallow granular fluid. Physical Review E, 2004, 70, 060301.	2.1	30
62	Ground fluidization promotes rapid running of a lightweight robot. International Journal of Robotics Research, 2013, 32, 859-869.	8.5	30
63	Surprising simplicity in the modeling of dynamic granular intrusion. Science Advances, 2021, 7, .	10.3	30
64	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
65	Surprising simplicities and syntheses in limbless self-propulsion in sand. Journal of Experimental Biology, 2020, 223, .	1.7	29
66	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
67	Tractable terrain-aware motion planning on granular media: An impulsive jumping study. , 2016, , .		26
68	Programming active cohesive granular matter with mechanically induced phase changes. Science Advances, 2021, 7, .	10.3	26
69	Colloquium: Biophysical principles of undulatory self-propulsion in granular media. Reviews of Modern Physics, 2014, 86, 943-958.	45.6	25
70	Kirigami Skin Improves Soft Earthworm Robot Anchoring and Locomotion Under Cohesive Soil. , 2019, , .		25
71	Physics approaches to natural locomotion: Every robot is an experiment. , 2019, , 109-127.		24
72	Mitigating memory effects during undulatory locomotion on hysteretic materials. ELife, 2020, 9, .	6.0	23

#	Article	IF	Citations
73	Lift-Off Dynamics in a Simple Jumping Robot. Physical Review Letters, 2012, 109, 174301.	7.8	22
74	Granular lift forces predict vertical motion of a sand-swimming robot. , 2011, , .		21
75	Geometric Swimming on a Granular Surface. , 0, , .		21
76	Kink-Induced Transport and Segregation in Oscillated Granular Layers. Physical Review Letters, 2003, 91, 134301.	7.8	19
77	Systematic study of the performance of small robots on controlled laboratory substrates. Proceedings of SPIE, 2010, , .	0.8	18
78	Simplifying Gait Design via Shape Basis Optimization. , 0, , .		18
79	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
80	Frequency modulation of body waves to improve performance of sidewinding robots. International Journal of Robotics Research, 2021, 40, 1547-1562.	8.5	16
81	A stability region criterion for flat-footed bipedal walking on deformable granular terrain. , 2017, , .		15
82	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
83	Design of a soft robophysical earthworm model. , 2018, , .		13
84	Dynamics of scattering in undulatory active collisions. Physical Review E, 2019, 99, 022606.	2.1	13
85	A systematic approach to creating terrain-capable hybrid soft/hard myriapod robots. , 2020, , .		13
86	Emergent Collective Locomotion in an Active Polymer Model of Entangled Worm Blobs. Frontiers in Physics, 2021, 9, .	2.1	13
87	Lateral bending and buckling aids biological and robotic earthworm anchoring and locomotion. Bioinspiration and Biomimetics, 2022, 17, 016001.	2.9	13
88	Learning to jump in granular media: Unifying optimal control synthesis with Gaussian process-based regression. , 2017, , .		12
89	Nutation Aids Heterogeneous Substrate Exploration in a Robophysical Root. , 2019, , .		12
90	Reconstruction of Backbone Curves for Snake Robots. IEEE Robotics and Automation Letters, 2021, 6, 3264-3270.	5.1	12

#	Article	IF	Citations
91	Side-impact collision: mechanics of obstacle negotiation in sidewinding snakes. Bioinspiration and Biomimetics, 2020, 15, 065005.	2.9	12
92	Comparative study of snake lateral undulation kinematics in model heterogeneous terrain. Integrative and Comparative Biology, 2023, 63, 198-208.	2.0	11
93	A general locomotion control framework for multi-legged locomotors. Bioinspiration and Biomimetics, 2022, 17, 046015.	2.9	11
94	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
95	Limbless locomotors that turn in place. , 2015, , .		10
96	Phototactic supersmarticles. Artificial Life and Robotics, 2018, 23, 459-468.	1.2	10
97	AN AUTOMATED SYSTEM FOR SYSTEMATIC TESTING OF LOCOMOTION ON HETEROGENEOUS GRANULAR MEDIA. , 2013, , .		10
98	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
99	Oxygenation-Controlled Collective Dynamics in Aquatic Worm Blobs. Integrative and Comparative Biology, 2022, 62, 890-896.	2.0	10
100	A minimal robophysical model of quadriflagellate self-propulsion. Bioinspiration and Biomimetics, 2021, 16, 066001.	2.9	9
101	Efficacy of simple continuum models for diverse granular intrusions. Soft Matter, 2021, 17, 7196-7209.	2.7	9
102	Emergence of order in an oscillated granular layer. Physica A: Statistical Mechanics and Its Applications, 2002, 306, 180-188.	2.6	8
103	Robophysical Modeling of Bilaterally Activated and Soft Limbless Locomotors. Lecture Notes in Computer Science, 2020, , 300-311.	1.3	8
104	Geometric Mechanics Applied to Tetrapod Locomotion on Granular Media. Lecture Notes in Computer Science, 2017, , 595-603.	1.3	8
105	Low density fragile states in cohesive powders. American Journal of Physics, 2006, 74, 720-721.	0.7	7
106	Robot-inspired biology: The compound-wave control template. , 2015, , .		7
107	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
108	Effect of two parallel intruders on total work during granular penetrations. Physical Review E, 2021, 104, 024902.	2.1	7

#	Article	IF	Citations
109	The dynamics of legged locomotion in heterogeneous terrain: universality in scattering and sensitivity to initial conditions. , 0, , .		7
110	Stages of relaxation of patterns and the role of stochasticity in the final stage. Nonlinearity, 2004, 17, 1535-1546.	1.4	6
111	Anticipatory control using substrate manipulation enables trajectory control of legged locomotion on heterogeneous granular media. , 2015, , .		6
112	Fast, versatile and quantitative annotation of complex images. BioTechniques, 2019, 66, 269-275.	1.8	5
113	Robophysical study of excavation in confined environments. Artificial Life and Robotics, 2016, 21, 460-465.	1.2	4
114	Air-Fluidized Aggregates of Black Soldier fly Larvae. Frontiers in Physics, 2021, 9, .	2.1	4
115	Swimming in the desert. Physics Today, 2013, 66, 68-69.	0.3	3
116	Entangled Granular Media. , 2016, , 341-354.		3
117	Collisional Diffraction Emerges from Simple Control of Limbless Locomotion. Lecture Notes in Computer Science, 2017, , 611-618.	1.3	3
118	Construction and Excavation by Collaborative Double-Tailed SAW Robots. IEEE Robotics and Automation Letters, 2022, 7, 3742-3748.	5.1	3
119	Toward Task Capable Active Matter: Learning to Avoid Clogging in Confined Collectives via Collisions. Frontiers in Physics, 0, 10, .	2.1	3
120	Generalized Omega Turn Gait Enables Agile Limbless Robot Turning in Complex Environments. , 2022, , .		3
121	Locomoting Robots Composed of Immobile Robots. , 2018, , .		2
122	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
123	Bipedial Locomotion Up Sandy Slopes: Systematic Experiments Using Zero Moment Point Methods. , 2018, , .		1
124	GEOMETRIC MECHANICS FOR SAND-SWIMMING. , 2012, , 705-712.		1
125	Frequency Modulation of Body Waves to Improve Performance of Limbless Robots. , 0, , .		1
126	Toward a Terramechanics for Bio-Inspired Locomotion in Granular Environments. , 2012, , .		0