

Gregory S Chirikjian

List of Publications by Year in descending order

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132
papers

4,398
citations

185998

28
h-index

123241

61
g-index

136
all docs

136
docs citations

136
times ranked

2866
citing authors

#	ARTICLE	IF	CITATIONS
1	Modular Self-Reconfigurable Robot Systems [Grand Challenges of Robotics]. IEEE Robotics and Automation Magazine, 2007, 14, 43-52.	2.2	851
2	Equilibrium Conformations of Concentric-tube Continuum Robots. International Journal of Robotics Research, 2010, 29, 1263-1280.	5.8	181
3	Efficient Generation of Feasible Pathways for Protein Conformational Transitions. Biophysical Journal, 2002, 83, 1620-1630.	0.2	163
4	Hyper-redundant manipulator dynamics: a continuum approximation. Advanced Robotics, 1994, 9, 217-243.	1.1	146
5	Evaluating efficiency of self-reconfiguration in a class of modular robots. Journal of Field Robotics, 1996, 13, 317-338.	0.7	127
6	Elastic models of conformational transitions in macromolecules. Journal of Molecular Graphics and Modelling, 2002, 21, 151-160.	1.3	117
7	Nonparametric Second-order Theory of Error Propagation on Motion Groups. International Journal of Robotics Research, 2008, 27, 1258-1273.	5.8	90
8	Modular Robot Motion Planning Using Similarity Metrics. Autonomous Robots, 2001, 10, 91-106.	3.2	83
9	Rigid-Cluster Models of Conformational Transitions in Macromolecular Machines and Assemblies. Biophysical Journal, 2005, 89, 43-55.	0.2	79
10	Kinematic state estimation and motion planning for stochastic nonholonomic systems using the exponential map. Robotica, 2008, 26, 419-434.	1.3	78
11	The Path-of-probability Algorithm for Steering and Feedback Control of Flexible Needles. International Journal of Robotics Research, 2010, 29, 813-830.	5.8	72
12	FTRAC-A robust fluoroscope tracking fiducial. Medical Physics, 2005, 32, 3185-3198.	1.6	70
13	Analysis of angular-error uncertainty in planar multiple-loop structures with joint clearances. Mechanism and Machine Theory, 2015, 91, 69-85.	2.7	62
14	Matching and reconstruction of brachytherapy seeds using the Hungarian algorithm (MARSHAL). Medical Physics, 2005, 32, 3475-3492.	1.6	56
15	Efficient workspace generation for binary manipulators with many actuators. Journal of Field Robotics, 1995, 12, 383-400.	0.7	54
16	Simultaneous Hand-Eye and Robot-World Calibration by Solving the $AX=YB$ Problem Without Correspondence. IEEE Robotics and Automation Letters, 2016, 1, 145-152.	3.3	53
17	Normal mode analysis of proteins: a comparison of rigid cluster modes with $\hat{C}\pm$ coarse graining. Journal of Molecular Graphics and Modelling, 2004, 22, 183-193.	1.3	47
18	Ultrasound Probe and Needle-Guide Calibration for Robotic Ultrasound Scanning and Needle Targeting. IEEE Transactions on Biomedical Engineering, 2013, 60, 1728-1734.	2.5	40

#	ARTICLE	IF	CITATIONS
19	Inverse Kinematics of Binary Manipulators Using a Continuum Model. <i>Journal of Intelligent and Robotic Systems: Theory and Applications</i> , 1997, 19, 5-22.	2.0	39
20	Conformational statistics of stiff macromolecules as solutions to partial differential equations on the rotation and motion groups. <i>Physical Review E</i> , 2000, 62, 880-892.	0.8	37
21	A new inverse kinematics algorithm for binary manipulators with many actuators. <i>Advanced Robotics</i> , 2001, 15, 225-244.	1.1	36
22	Iterative cluster-NMA: A tool for generating conformational transitions in proteins. <i>Proteins: Structure, Function and Bioinformatics</i> , 2009, 74, 760-776.	1.5	36
23	Numerical algorithms for spatial registration of line fiducials from cross-sectional images. <i>Medical Physics</i> , 2002, 29, 1881-1891.	1.6	34
24	Efficient determination of low-frequency normal modes of large protein structures by cluster-NMA. <i>Journal of Molecular Graphics and Modelling</i> , 2005, 24, 46-58.	1.3	34
25	Deployable parallel lower-mobility manipulators with scissor-like elements. <i>Mechanism and Machine Theory</i> , 2019, 135, 226-250.	2.7	34
26	Conformational analysis of stiff chiral polymers with end-constraints. <i>Molecular Simulation</i> , 2006, 32, 1139-1154.	0.9	33
27	Robotic Self-replication in Structured Environments: Physical Demonstrations and Complexity Measures. <i>International Journal of Robotics Research</i> , 2008, 27, 387-401.	5.8	31
28	A Comparison Between Elastic Network Interpolation and MD Simulation of 16S Ribosomal RNA. <i>Journal of Biomolecular Structure and Dynamics</i> , 2003, 21, 395-405.	2.0	30
29	Probabilistic approaches to the $AXB = YCZ$ calibration problem in multi-robot systems. <i>Autonomous Robots</i> , 2018, 42, 1497-1520.	3.2	30
30	Analysis and Design of Protein Based Nanodevices: Challenges and Opportunities in Mechanical Design. <i>Journal of Mechanical Design, Transactions of the ASME</i> , 2005, 127, 695-698.	1.7	28
31	A stochastic kinematic model of class averaging in single-particle electron microscopy. <i>International Journal of Robotics Research</i> , 2011, 30, 730-754.	5.8	28
32	An operational calculus for the euclidean motion group with applications in robotics and polymer science. <i>Journal of Fourier Analysis and Applications</i> , 2000, 6, 583-606.	0.5	26
33	Conformational statistics of bent semiflexible polymers. <i>Journal of Chemical Physics</i> , 2003, 119, 4962-4970.	1.2	26
34	Closed-form characterization of the Minkowski sum and difference of two ellipsoids. <i>Geometriae Dedicata</i> , 2015, 177, 103-128.	0.1	26
35	M ³ Express: A low-cost independently-mobile reconfigurable modular robot. , 2012, , .		25
36	Online ultrasound sensor calibration using gradient descent on the Euclidean Group. , 2014, , .		25

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37	An enhanced moment-based approach to time-dependent positional reliability analysis for robotic manipulators. <i>Mechanism and Machine Theory</i> , 2021, 156, 104167.	2.7	25
38	Interhelical Angle and Distance Preferences in Globular Proteins. <i>Biophysical Journal</i> , 2004, 86, 1105-1117.	0.2	24
39	Conformational Statistics of Semiflexible Macromolecular Chains with Internal Joints. <i>Macromolecules</i> , 2006, 39, 1950-1960.	2.2	24
40	An architecture for universal construction via modular robotic components. <i>Robotics and Autonomous Systems</i> , 2014, 62, 945-965.	3.0	24
41	A 3D Localization Approach for Subsea Pipelines Using a Spherical Detector. <i>IEEE Sensors Journal</i> , 2017, 17, 1828-1836.	2.4	23
42	Analysis of the conformational dependence of mass-metric tensor determinants in serial polymers with constraints. <i>Journal of Chemical Physics</i> , 2004, 121, 12708.	1.2	22
43	Constrained workspace generation for snake-like manipulators with applications to minimally invasive surgery. , 2013, , .		22
44	Algorithms for Fast Convolutions on Motion Groups. <i>Applied and Computational Harmonic Analysis</i> , 2000, 9, 220-241.	1.1	21
45	Workspace density and inverse kinematics for planar serial revolute manipulators. <i>Mechanism and Machine Theory</i> , 2013, 70, 508-522.	2.7	21
46	Gaussian approximation of non-linear measurement models on Lie groups. , 2014, , .		20
47	Pattern Matching as a Correlation on the Discrete Motion Group. <i>Computer Vision and Image Understanding</i> , 1999, 74, 22-35.	3.0	19
48	Design and analysis of some nonanthropomorphic, biologically inspired robots: An overview. <i>Journal of Field Robotics</i> , 2001, 18, 701-713.	0.7	19
49	Modeling Loop Entropy. <i>Methods in Enzymology</i> , 2011, 487, 99-132.	0.4	19
50	Sensor calibration with unknown correspondence: Solving $AX \approx XB$ using Euclidean-group invariants. , 2013, , .		19
51	Toward Cooperative Team-diagnosis in Multi-robot Systems. <i>International Journal of Robotics Research</i> , 2008, 27, 1069-1090.	5.8	18
52	Accurate Image Rotation Using Hermite Expansions. <i>IEEE Transactions on Image Processing</i> , 2009, 18, 1988-2003.	6.0	18
53	Group theory and biomolecular conformation: I. Mathematical and computational models. <i>Journal of Physics Condensed Matter</i> , 2010, 22, 323103.	0.7	18
54	Information-theoretic inequalities on unimodular Lie groups. <i>Journal of Geometric Mechanics</i> , 2010, 2, 119-158.	0.5	18

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55	Information theory on Lie groups and mobile robotics applications. , 2010, , .		17
56	Interconversion Between Truncated Cartesian and Polar Expansions of Images. IEEE Transactions on Image Processing, 2007, 16, 1946-1955.	6.0	15
57	Multiscale Modeling of Double-Helical DNA and RNA: A Unification through Lie Groups. Journal of Physical Chemistry B, 2012, 116, 8556-8572.	1.2	15
58	An information-theoretic approach to the correspondence-free AX=XB sensor calibration problem. , 2014, , .		14
59	An Assembly Automation Approach to Alignment of Noncircular Projections in Electron Microscopy. IEEE Transactions on Automation Science and Engineering, 2014, 11, 668-679.	3.4	14
60	Pose Changes From a Different Point of View. Journal of Mechanisms and Robotics, 2018, 10, .	1.5	13
61	A methodology for determining mechanical properties of macromolecules from ensemble motion data. TrAC - Trends in Analytical Chemistry, 2003, 22, 549-553.	5.8	12
62	A method for finding candidate conformations for molecular replacement using relative rotation between domains of a known structure. Acta Crystallographica Section D: Biological Crystallography, 2006, 62, 398-409.	2.5	12
63	Discretely Actuated Manipulator Workspace Generation by Closed Form Convolution. Journal of Mechanical Design, Transactions of the ASME, 1998, 120, 245-251.	1.7	11
64	O(n) mass matrix inversion for serial manipulators and polypeptide chains using Lie derivatives. Robotica, 2007, 25, 739-750.	1.3	11
65	Mathematical aspects of molecular replacement. I. Algebraic properties of motion spaces. Acta Crystallographica Section A: Foundations and Advances, 2011, 67, 435-446.	0.3	11
66	Quantitative Comparison of Conformational Ensembles. Entropy, 2012, 14, 213-232.	1.1	11
67	Bundle folding type III Bricard linkages. Mechanism and Machine Theory, 2020, 144, 103663.	2.7	11
68	Lateral Oscillation and Body Compliance Help Snakes and Snake Robots Stably Traverse Large, Smooth Obstacles. Integrative and Comparative Biology, 2020, 60, 171-179.	0.9	11
69	Regularized Solutions of a Nonlinear Convolution Equation on the Euclidean Group. Acta Applicandae Mathematicae, 1998, 53, 89-123.	0.5	10
70	Mathematical aspects of molecular replacement. II. Geometry of motion spaces. Acta Crystallographica Section A: Foundations and Advances, 2012, 68, 208-221.	0.3	10
71	Parts entropy and the principal kinematic formula. , 2008, , .		9
72	Framed curves and knotted DNA. Biochemical Society Transactions, 2013, 41, 635-638.	1.6	9

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73	Cross-Validation of Data Compatibility Between Small Angle X-ray Scattering and Cryo-Electron Microscopy. <i>Journal of Computational Biology</i> , 2017, 24, 13-30.	0.8	9
74	Partial Bi-Invariance of SE(3) Metrics ¹ . <i>Journal of Computing and Information Science in Engineering</i> , 2015, 15, .	1.7	8
75	Can I lift it? Humanoid robot reasoning about the feasibility of lifting a heavy box with unknown physical properties. , 2020, , .		8
76	ROTATIONAL MATCHING PROBLEMS. <i>International Journal of Computational Intelligence and Applications</i> , 2004, 04, 401-416.	0.6	7
77	Robotic Self-Replication in a Structured Environment without Computer Control. , 2007, , .		7
78	The stochastic elastica and excluded-volume perturbations of DNA conformational ensembles. <i>International Journal of Non-Linear Mechanics</i> , 2008, 43, 1108-1120.	1.4	7
79	Multi-Mosquito Object Detection and 2D Pose Estimation for Automation of PfSPZ Malaria Vaccine Production. , 2019, , .		7
80	Position and orientation distributions for locally self-avoiding walks in the presence of obstacles. <i>Polymer</i> , 2008, 49, 1701-1715.	1.8	6
81	A stochastic self-replicating robot capable of hierarchical assembly. <i>Robotica</i> , 2011, 29, 137-152.	1.3	6
82	Almost-uniform sampling of rotations for conformational searches in Robotics and Structural Biology. , 2012, , .		6
83	New probabilistic approaches to the $AX = XB$ hand-eye calibration without correspondence. , 2016, , .		6
84	Inverse kinematic solutions of 6-D.O.F. biopolymer segments. <i>Robotica</i> , 2016, 34, 1734-1753.	1.3	6
85	Analysis of a mechanism with redundant drive for antenna pointing. <i>Proceedings of the Institution of Mechanical Engineers, Part G: Journal of Aerospace Engineering</i> , 2017, 231, 229-239.	0.7	6
86	Fourierâ€™Zernike Series of Convolutions on Disks. <i>Mathematics</i> , 2018, 6, 290.	1.1	6
87	Lie group solutions of advection-diffusion equations. <i>Physics of Fluids</i> , 2021, 33, .	1.6	6
88	Robotic self-replication. <i>IEEE Robotics and Automation Magazine</i> , 2007, 14, .	2.2	5
89	Hex-DMR: A modular robotic test-bed for demonstrating team repair. , 2012, , .		5
90	Collision-free configuration-spaces in macromolecular crystals. <i>Robotica</i> , 2016, 34, 1679-1704.	1.3	5

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91	Signal Alignment for Humanoid Skeletons via the Globally Optimal Reparameterization Algorithm. , 2018, , .		5
92	A simple insertion technique to reduce the bending of thinbevel-point needles. Minimally Invasive Therapy and Allied Technologies, 2019, 28, 199-205.	0.6	5
93	Sensorless Pose Determination using Randomized Action Sequences. Entropy, 2019, 21, 154.	1.1	5
94	Robotic Self-Replication. Annual Review of Control, Robotics, and Autonomous Systems, 2020, 3, 1-24.	7.5	5
95	Continuous body 3-D reconstruction of limbless animals. Journal of Experimental Biology, 2021, 224, .	0.8	5
96	Torsional random-walk statistics on lattices using convolution on crystallographic motion groups. Polymer, 2007, 48, 2155-2173.	1.8	4
97	Signal Classification in Quotient Spaces via Globally Optimal Variational Calculus. , 2017, , .		4
98	The Globally Optimal Reparameterization Algorithm: An Alternative to Fast Dynamic Time Warping for Action Recognition in Video Sequences. , 2018, , .		4
99	Efficient Exact Collision Detection between Ellipsoids and Superquadrics via Closed-form Minkowski Sums. , 2019, , .		4
100	Mosquito Pick-and-Place: Automating a Key Step in PfSPZ-based Malaria Vaccine Production. , 2019, , .		4
101	Mosquito Staging Apparatus for Producing PfSPZ Malaria Vaccines. , 2019, , .		4
102	Black-Scholes Theory and Diffusion Processes on the Cotangent Bundle of the Affine Group. Entropy, 2020, 22, 455.	1.1	4
103	Applications of convex geometry to Minkowski sums of m ellipsoids in $\hat{\mathbb{R}}^N$: Closed-form parametric equations and volume bounds. International Journal of Mathematics, 2021, 32, .	0.2	4
104	Collision Detection for Unions of Convex Bodies With Smooth Boundaries Using Closed-Form Contact Space Parameterization. IEEE Robotics and Automation Letters, 2022, 7, 9485-9492.	3.3	4
105	Simple components for a reconfigurable modular robotic system. , 2009, , .		3
106	Signal Detection on Euclidean Groups: Applications to DNA Bends, Robot Localization, and Optical Communication. IEEE Journal on Selected Topics in Signal Processing, 2013, 7, 708-719.	7.3	3
107	Voronoi cells in lie groups and coset decompositions: Implications for optimization, integration, and fourier analysis. , 2013, , .		3
108	Computational Analysis of SAXS Data Acquisition. Journal of Computational Biology, 2015, 22, 787-805.	0.8	3

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109	Mathematical aspects of molecular replacement. IV. Measure-theoretic decompositions of motion spaces. Acta Crystallographica Section A: Foundations and Advances, 2017, 73, 387-402.	0.0	3
110	The Kinematics of Containment for N-Dimensional Ellipsoids. Journal of Mechanisms and Robotics, 2019, 11, .	1.5	3
111	Quotienting Impertinent Camera Kinematics for 3D Video Stabilization. , 2019, , .		3
112	Mathematical aspects of molecular replacement. V. Isolating feasible regions in motion spaces. Acta Crystallographica Section A: Foundations and Advances, 2020, 76, 145-162.	0.0	3
113	Fourierâ€™Bessel series of compactly supported convolutions on disks. Analysis and Applications, 0, , 1-22.	1.2	3
114	Uniformly Interpolated Elements of SE(3) and their Application to Manipulator Design. , 2006, , .		2
115	Tomographic reconstruction of band-limited hermite expansions. Proceedings of SPIE, 2008, 6913, .	0.8	2
116	An autonomous robot that duplicates itself from low-complexity components. , 2010, , .		2
117	Cross-validation of data in SAXS and cryo-EM. , 2015, , .		2
118	From Wirtinger to Fisher Information Inequalities on Spheres and Rotation Groups. , 2018, , .		2
119	Discrete spectra of convolutions of compactly supported functions on SE(2) using Sturmâ€™Liouville theory. Integral Transforms and Special Functions, 2020, 31, 36-61.	0.8	2
120	ECHO: Extended Convolution Histogram of Orientations for Local Surface Description. Computer Graphics Forum, 2021, 40, 180-194.	1.8	2
121	Fourierâ€™Zernike series of compactly supported convolutions on S^2 . Journal of Approximation Theory, 2021, 271, 105621.	0.5	2
122	Position and Orientation Distributions for Non-Reversal Random Walks using Space-Group Fourier Transforms. Journal of Algebraic Statistics, 2015, 1, 27-46.	0.6	2
123	Symmetrical rigid body parameterization for biomolecular structures. , 2016, , .		1
124	Symmetrical Parameterization of Rigid Body Transformations for Biomolecular Structures. Journal of Computational Biology, 2018, 25, 72-88.	0.8	1
125	Entropy, symmetry, and the difficulty of self-replication. Artificial Life and Robotics, 0, , 1.	0.7	1
126	Rate of Entropy Production in Stochastic Mechanical Systems. Entropy, 2022, 24, 19.	1.1	1

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127	A Jacobian-Based Algorithm for Planning Attitude Maneuvers Using Forward and Reverse Rotations. Journal of Computational and Nonlinear Dynamics, 2009, 4, .	0.7	0
128	A Computational Modeling of Macromolecular Assemblies in SAXS. Biophysical Journal, 2015, 108, 619a.	0.2	0
129	Symmetrical rigid body parameterizations for humanoid robots. , 2016, , .		0
130	Ito, Stratonovich and Geometry. , 2019, , .		0
131	Abstract noncommutative Fourier series on $\Gamma \setminus SE(2)$. Pure and Applied Mathematics Quarterly, 2022, 18, 71-100.	0.2	0
132	Put the Bear on the Chair! Intelligent Robot Interaction with Previously Unseen Chairs via Robot Imagination. , 2022, , .		0