

Rida T Farouki

List of Publications by Year in descending order

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145
papers

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148
docs citations

148
times ranked

1318
citing authors

#	ARTICLE	IF	CITATIONS
1	The Bernstein polynomial basis: A centennial retrospective. <i>Computer Aided Geometric Design</i> , 2012, 29, 379-419.	0.5	342
2	Pythagorean-Hodograph Curves: Algebra and Geometry Inseparable. <i>Geometry and Computing</i> , 2008, , .	0.1	168
3	The conformal map $z \mapsto z^2$ of the hodograph plane. <i>Computer Aided Geometric Design</i> , 1994, 11, 363-390.	0.5	148
4	Exact Taylor series coefficients for variable-feedrate CNC curve interpolators. <i>CAD Computer Aided Design</i> , 2001, 33, 155-165.	1.4	138
5	Real-time CNC interpolators for Pythagorean-hodograph curves. <i>Computer Aided Geometric Design</i> , 1996, 13, 583-600.	0.5	124
6	Pythagorean-hodograph space curves. <i>Advances in Computational Mathematics</i> , 1994, 2, 41-66.	0.8	120
7	Hermite Interpolation by Rotation-Invariant Spatial Pythagorean-Hodograph Curves. <i>Advances in Computational Mathematics</i> , 2002, 17, 369-383.	0.8	112
8	Surface Analysis Methods. <i>IEEE Computer Graphics and Applications</i> , 1986, 6, 18-36.	1.0	104
9	Algorithms for time- ϵ optimal control of CNC machines along curved tool paths. <i>Robotics and Computer-Integrated Manufacturing</i> , 2005, 21, 37-53.	6.1	94
10	The elastic bending energy of pythagorean-hodograph curves. <i>Computer Aided Geometric Design</i> , 1996, 13, 227-241.	0.5	89
11	Real rational curves are not ϵ -unit speed ϵ^{TM} . <i>Computer Aided Geometric Design</i> , 1991, 8, 151-157.	0.5	82
12	G codes for the specification of Pythagorean-hodograph tool paths and associated feedrate functions on open-architecture CNC machines. <i>International Journal of Machine Tools and Manufacture</i> , 1999, 39, 123-142.	6.2	78
13	Performance analysis of CNC interpolators for time-dependent feedrates along PH curves. <i>Computer Aided Geometric Design</i> , 2001, 18, 245-265.	0.5	75
14	Construction and shape analysis of PH quintic Hermite interpolants. <i>Computer Aided Geometric Design</i> , 2001, 18, 93-115.	0.5	73
15	Construction of C^2 Pythagorean-hodograph interpolating splines by the homotopy method. <i>Advances in Computational Mathematics</i> , 1996, 5, 417-442.	0.8	68
16	Legendre ϵ -Bernstein basis transformations. <i>Journal of Computational and Applied Mathematics</i> , 2000, 119, 145-160.	1.1	67
17	Voronoi diagram and medial axis algorithm for planar domains with curved boundaries I. Theoretical foundations. <i>Journal of Computational and Applied Mathematics</i> , 1999, 102, 119-141.	1.1	66
18	Identification of spatial PH quintic Hermite interpolants with near-optimal shape measures. <i>Computer Aided Geometric Design</i> , 2008, 25, 274-297.	0.5	66

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19	A Hierarchy of Geometric Forms. IEEE Computer Graphics and Applications, 1985, 5, 51-78.	1.0	60
20	Structural invariance of spatial Pythagorean hodographs. Computer Aided Geometric Design, 2002, 19, 395-407.	0.5	59
21	The bisector of a point and a plane parametric curve. Computer Aided Geometric Design, 1994, 11, 117-151.	0.5	56
22	Optimal parameterizations. Computer Aided Geometric Design, 1997, 14, 153-168.	0.5	53
23	Trimmed-surface algorithms for the evaluation and interrogation of solid boundary representations. IBM Journal of Research and Development, 1987, 31, 314-334.	3.2	49
24	Efficient Solution of the Complex Quadratic Tridiagonal System for C2 PH Quintic Splines. Numerical Algorithms, 2001, 27, 35-60.	1.1	48
25	Optimal tool orientation control for 5-axis CNC milling with ball-end cutters. Computer Aided Geometric Design, 2013, 30, 226-239.	0.5	48
26	Characterization and construction of helical polynomial space curves. Journal of Computational and Applied Mathematics, 2004, 162, 365-392.	1.1	47
27	High-speed cornering by CNC machines under prescribed bounds on axis accelerations and toolpath contour error. International Journal of Advanced Manufacturing Technology, 2012, 58, 327-338.	1.5	47
28	Rational approximation schemes for rotation-minimizing frames on Pythagorean-hodograph curves. Computer Aided Geometric Design, 2003, 20, 435-454.	0.5	46
29	Geometric Hermite interpolation by spatial Pythagorean-hodograph cubics. Advances in Computational Mathematics, 2005, 22, 325-352.	0.8	46
30	Contour machining of free-form surfaces with real-time PH curve CNC interpolators. Computer Aided Geometric Design, 1999, 16, 61-76.	0.5	44
31	Monte Carlo simulations of space-charge-limited ion transport through collisional plasma sheaths. Physical Review A, 1991, 44, 2664-2681.	1.0	42
32	Pythagorean-hodograph quintic transition curves of monotone curvature. CAD Computer Aided Design, 1997, 29, 601-606.	1.4	42
33	A control polygon scheme for design of planar PH quintic spline curves. Computer Aided Geometric Design, 2007, 24, 28-52.	0.5	42
34	Construction of orthogonal bases for polynomials in Bernstein form on triangular and simplex domains. Computer Aided Geometric Design, 2003, 20, 209-230.	0.5	40
35	Time-optimal traversal of curved paths by Cartesian CNC machines under both constant and speed-dependent axis acceleration bounds. Robotics and Computer-Integrated Manufacturing, 2007, 23, 563-579.	6.1	39
36	Construction of G1 planar Hermite interpolants with prescribed arc lengths. Computer Aided Geometric Design, 2016, 46, 64-75.	0.5	38

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37	Quaternion and Hopf map characterizations for the existence of rational rotation-minimizing frames on quintic space curves. <i>Advances in Computational Mathematics</i> , 2010, 33, 331-348.	0.8	37
38	Design of rational rotation-minimizing rigid body motions by Hermite interpolation. <i>Mathematics of Computation</i> , 2011, 81, 879-903.	1.1	37
39	Specified-Precision Computation of Curve/Curve Bisectors. <i>International Journal of Computational Geometry and Applications</i> , 1998, 08, 599-617.	0.3	36
40	Voronoi diagram and medial axis algorithm for planar domains with curved boundaries II: Detailed algorithm description. <i>Journal of Computational and Applied Mathematics</i> , 1999, 102, 253-277.	1.1	36
41	Physical constraints on feedrates and feed accelerations along curved tool paths. <i>Computer Aided Geometric Design</i> , 2000, 17, 337-359.	0.5	36
42	Minkowski Geometric Algebra of Complex Sets. <i>Geometriae Dedicata</i> , 2001, 85, 283-315.	0.1	36
43	Rational rotation-minimizing frames on polynomial space curves of arbitrary degree. <i>Journal of Symbolic Computation</i> , 2010, 45, 844-856.	0.5	36
44	Performance analysis of cross-coupled controllers for CNC machines based upon precise real-time contour error measurement. <i>International Journal of Machine Tools and Manufacture</i> , 2012, 52, 30-39.	6.2	36
45	Exact rotation-minimizing frames for spatial Pythagorean-hodograph curves. <i>Graphical Models</i> , 2002, 64, 382-395.	1.1	35
46	COMPUTING MINKOWSKI SUMS OF PLANE CURVES. <i>International Journal of Computational Geometry and Applications</i> , 1995, 05, 413-432.	0.3	33
47	Linear perturbation methods for topologically consistent representations of free-form surface intersections. <i>Computer Aided Geometric Design</i> , 2004, 21, 303-319.	0.5	33
48	Boundary-condition refinement of the Child-Langmuir law for collisionless dc plasma sheaths. <i>Journal of Applied Physics</i> , 1990, 68, 6106-6116.	1.1	32
49	Rational Pythagorean-hodograph space curves. <i>Computer Aided Geometric Design</i> , 2011, 28, 75-88.	0.5	32
50	Construction of rounded corners with Pythagorean-hodograph curves. <i>Computer Aided Geometric Design</i> , 2014, 31, 127-139.	0.5	32
51	Pythagorean-Hodograph Curves. , 2002, , 405-427.		32
52	Topological criterion for selection of quintic Pythagorean-hodograph Hermite interpolants. <i>Computer Aided Geometric Design</i> , 2008, 25, 411-433.	0.5	30
53	Quintic space curves with rational rotation-minimizing frames. <i>Computer Aided Geometric Design</i> , 2009, 26, 580-592.	0.5	29
54	1. Pythagorean-Hodograph Curves in Practical Use. , 1992, , 3-33.		27

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55	Algorithm 812: BPOLY. ACM Transactions on Mathematical Software, 2001, 27, 267-296.	1.6	27
56	Computation of optimal composite re-parameterizations. Computer Aided Geometric Design, 2001, 18, 875-897.	0.5	27
57	Solution of inverse dynamics problems for contour error minimization in CNC machines. International Journal of Advanced Manufacturing Technology, 2010, 49, 589-604.	1.5	27
58	Analysis of the offset to a parabola. Computer Aided Geometric Design, 1995, 12, 639-645.	0.5	26
59	Helical polynomial curves and double Pythagorean hodographs I. Quaternion and Hopf map representations. Journal of Symbolic Computation, 2009, 44, 161-179.	0.5	26
60	Inverse kinematics for optimal tool orientation control in 5-axis CNC machining. Computer Aided Geometric Design, 2014, 31, 13-26.	0.5	26
61	A complete classification of quintic space curves with rational rotation-minimizing frames. Journal of Symbolic Computation, 2012, 47, 214-226.	0.5	25
62	Guaranteed consistency of surface intersections and trimmed surfaces using a coupled topology resolution and domain decomposition scheme. Advances in Computational Mathematics, 2007, 27, 1-26.	0.8	22
63	Identification and "reverse engineering" of Pythagorean-hodograph curves. Computer Aided Geometric Design, 2015, 34, 21-36.	0.5	22
64	Efficient high-speed cornering motions based on continuously-variable feedrates. I. Real-time interpolator algorithms. International Journal of Advanced Manufacturing Technology, 2016, 87, 3557-3568.	1.5	22
65	Rational rotation-minimizing frames"Recent advances and open problems. Applied Mathematics and Computation, 2016, 272, 80-91.	1.4	22
66	Algorithms for Minkowski products and implicitly"defined complex sets. Advances in Computational Mathematics, 2000, 13, 199-229.	0.8	21
67	Exact Minkowski Products of N Complex Disks. Reliable Computing, 2002, 8, 43-66.	0.8	21
68	Existence of Pythagorean-hodograph quintic interpolants to spatial G1 Hermite data with prescribed arc lengths. Journal of Symbolic Computation, 2019, 95, 202-216.	0.5	21
69	Self-consistent Monte Carlo simulation of the cathode fall including treatment of negative-glow electrons. Physical Review A, 1992, 46, 1066-1077.	1.0	20
70	Rational space curves are not "unit speed". Computer Aided Geometric Design, 2007, 24, 238-240.	0.5	20
71	Helical polynomial curves and double Pythagorean hodographs II. Enumeration of low-degree curves. Journal of Symbolic Computation, 2009, 44, 307-332.	0.5	20
72	C2 interpolation of spatial data subject to arc-length constraints using Pythagorean"hodograph quintic splines. Graphical Models, 2014, 76, 30-42.	1.1	20

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73	Computing with barycentric polynomials. <i>Mathematical Intelligencer</i> , 1991, 13, 61-69.	0.1	19
74	Degenerate point/curve and curve/curve bisectors arising in medial axis computations for planar domains with curved boundaries. <i>Computer Aided Geometric Design</i> , 1998, 15, 615-635.	0.5	19
75	Gauss map computation for free-form surfaces. <i>Computer Aided Geometric Design</i> , 2001, 18, 831-850.	0.5	19
76	Rotation-minimizing Euler-Rodrigues rigid-body motion interpolants. <i>Computer Aided Geometric Design</i> , 2013, 30, 653-671.	0.5	18
77	Real-time CNC interpolators for Bézier conics. <i>Computer Aided Geometric Design</i> , 2001, 18, 639-655.	0.5	17
78	Rotation-minimizing osculating frames. <i>Computer Aided Geometric Design</i> , 2014, 31, 27-42.	0.5	17
79	Convergent inversion approximations for polynomials in Bernstein form. <i>Computer Aided Geometric Design</i> , 2000, 17, 179-196.	0.5	16
80	Optimal slicing of free-form surfaces. <i>Computer Aided Geometric Design</i> , 2002, 19, 43-64.	0.5	16
81	Spatial camera orientation control by rotation-minimizing directed frames. <i>Computer Animation and Virtual Worlds</i> , 2009, 20, 457-472.	0.7	16
82	A real-time surface interpolator methodology for precision CNC machining of swept surfaces. <i>International Journal of Advanced Manufacturing Technology</i> , 2016, 83, 561-574.	1.5	16
83	Conic Approximation of Conic Offsets. <i>Journal of Symbolic Computation</i> , 1997, 23, 301-313.	0.5	15
84	Construction of rational surface patches bounded by lines of curvature. <i>Computer Aided Geometric Design</i> , 2010, 27, 359-371.	0.5	15
85	Efficient high-speed cornering motions based on continuously-variable feedrates. II. Implementation and performance analysis. <i>International Journal of Advanced Manufacturing Technology</i> , 2017, 88, 159-174.	1.5	15
86	Pythagorean-hodograph curves in Euclidean spaces of dimension greater than 3. <i>Journal of Computational and Applied Mathematics</i> , 2012, 236, 4375-4382.	1.1	14
87	A comprehensive characterization of the set of polynomial curves with rational rotation-minimizing frames. <i>Advances in Computational Mathematics</i> , 2017, 43, 1-24.	0.8	14
88	Analysis of a kinematic model for ion transport in rf plasma sheaths. <i>Physical Review A</i> , 1992, 45, 5913-5928.	1.0	12
89	Topologically consistent trimmed surface approximations based on triangular patches. <i>Computer Aided Geometric Design</i> , 2004, 21, 459-478.	0.5	12
90	Local modification of Pythagorean-hodograph quintic spline curves using the B-spline form. <i>Advances in Computational Mathematics</i> , 2016, 42, 199-225.	0.8	12

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91	Path planning with Pythagorean-hodograph curves for unmanned or autonomous vehicles. Proceedings of the Institution of Mechanical Engineers, Part G: Journal of Aerospace Engineering, 2018, 232, 1361-1372.	0.7	12
92	Evaluating the boundary and covering degree of planar Minkowski sums and other geometrical convolutions. Journal of Computational and Applied Mathematics, 2007, 209, 246-266.	1.1	11
93	Algorithm 952. ACM Transactions on Mathematical Software, 2015, 41, 1-20.	1.6	11
94	Curves and Surfaces in Geometrical Optics. , 1992, , 239-260.		10
95	On integrating lines of curvature. Computer Aided Geometric Design, 1998, 15, 187-192.	0.5	9
96	Solution of elementary equations in the Minkowski geometric algebra of complex sets. Advances in Computational Mathematics, 2005, 22, 301-323.	0.8	9
97	A geometric product formulation for spatial Pythagorean hodograph curves with applications to Hermite interpolation. Computer Aided Geometric Design, 2007, 24, 220-237.	0.5	9
98	Non-existence of rational arc length parameterizations for curves in \mathbb{R}^n . Journal of Computational and Applied Mathematics, 2009, 228, 494-497.	1.1	9
99	Experimental study of contouring accuracy for CNC machines executing curved paths with constant and curvature-dependent feedrates. Robotics and Computer-Integrated Manufacturing, 2013, 29, 357-369.	6.1	9
100	Computational methods for rapid prototyping of analytic solid models. Rapid Prototyping Journal, 1996, 2, 41-48.	1.6	8
101	New Developments in Theory, Algorithms, and Applications for Pythagorean Hodograph Curves. Springer INdAM Series, 2019, , 127-177.	0.4	8
102	Geometric Design Using Space Curves with Rational Rotation-Minimizing Frames. Lecture Notes in Computer Science, 2010, , 194-208.	1.0	8
103	Root neighborhoods, generalized lemniscates, and robust stability of dynamic systems. Applicable Algebra in Engineering, Communications and Computing, 2007, 18, 169-189.	0.3	7
104	An interpolation scheme for designing rational rotation-minimizing camera motions. Advances in Computational Mathematics, 2013, 38, 63-82.	0.8	7
105	Experimental performance analysis of an inverse dynamics CNC compensation scheme for high-speed execution of curved toolpaths. International Journal of Advanced Manufacturing Technology, 2014, 73, 195-208.	1.5	7
106	Rational frames of minimal twist along space curves under specified boundary conditions. Advances in Computational Mathematics, 2018, 44, 1627-1650.	0.8	7
107	Inverse dynamics toolpath compensation for CNC machines based on model predictive control. International Journal of Advanced Manufacturing Technology, 2020, 109, 2155-2172.	1.5	7
108	Approximation of monotone clothoid segments by degree 7 Pythagorean hodograph curves. Journal of Computational and Applied Mathematics, 2021, 382, 113110.	1.1	7

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109	Algebraically rectifiable parametric curves. <i>Computer Aided Geometric Design</i> , 1993, 10, 551-569.	0.5	6
110	Scalarâ€vector algorithm for the roots of quadratic quaternion polynomials, and the characterization of quintic rational rotation-minimizing frame curves. <i>Journal of Symbolic Computation</i> , 2013, 58, 1-17.	0.5	6
111	Rational swept surface constructions based on differential and integral sweep curve properties. <i>Computer Aided Geometric Design</i> , 2015, 33, 1-16.	0.5	6
112	Solution of a quadratic quaternion equation with mixed coefficients. <i>Journal of Symbolic Computation</i> , 2016, 74, 140-151.	0.5	6
113	C1 and C2 interpolation of orientation data along spatial Pythagorean-hodograph curves using rational adapted spline frames. <i>Computer Aided Geometric Design</i> , 2018, 66, 1-15.	0.5	6
114	Minkowski Geometric Algebra and the Stability of Characteristic Polynomials. <i>Mathematics and Visualization</i> , 2003, , 163-188.	0.4	6
115	Computation of Minkowski Values of Polynomials over Complex Sets. <i>Numerical Algorithms</i> , 2004, 36, 13-29.	1.1	5
116	Tensor-product surface patches with Pythagorean-hodograph isoparametric curves. <i>IMA Journal of Numerical Analysis</i> , 2016, 36, 1389-1409.	1.5	5
117	Optimization of Corner Blending Curves. <i>CAD Computer Aided Design</i> , 2019, 117, 102739.	1.4	5
118	A general framework for solving inverse dynamics problems in multi-axis motion control. <i>ISA Transactions</i> , 2019, 95, 130-143.	3.1	5
119	Rational minimal-twist motions on curves with rotation-minimizing Eulerâ€Rodrigues frames. <i>Journal of Computational and Applied Mathematics</i> , 2019, 352, 240-254.	1.1	5
120	Singular cases of planar and spatial C1 Hermite interpolation problems based on quintic Pythagorean-hodograph curves. <i>Computer Aided Geometric Design</i> , 2020, 82, 101930.	0.5	5
121	Design of C 2 Spatial Pythagorean-Hodograph Quintic Spline Curves by Control Polygons. <i>Lecture Notes in Computer Science</i> , 2012, , 253-269.	1.0	5
122	Boundary evaluation algorithms for Minkowski combinations of complex sets using topological analysis of implicit curves. <i>Numerical Algorithms</i> , 2005, 40, 251-283.	1.1	4
123	Arc lengths of rational Pythagoreanâ€hodograph curves. <i>Computer Aided Geometric Design</i> , 2015, 34, 1-4.	0.5	4
124	Robust plotting of generalized lemniscates. <i>Applied Numerical Mathematics</i> , 2004, 51, 257-272.	1.2	3
125	Equivalence of distinct characterizations for rational rotation-minimizing frames on quintic space curves. <i>Computer Aided Geometric Design</i> , 2011, 28, 436-445.	0.5	3
126	Helical polynomial curves interpolating G 1 data with prescribed axes and pitch angles. <i>Computer Aided Geometric Design</i> , 2017, 56, 4-15.	0.5	3

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127	Construction of rational curves with rational arc lengths by direct integration. Computer Aided Geometric Design, 2019, 74, 101773.	0.5	3
128	Mapping rational rotation-minimizing frames from polynomial curves on to rational curves. Computer Aided Geometric Design, 2020, 78, 101833.	0.5	3
129	Real-time compensation of backlash positional errors in CNC machines by localized feedrate modulation. International Journal of Advanced Manufacturing Technology, 2022, 119, 5763.	1.5	3
130	The Cartesian Ovals. Mathematical Intelligencer, 2022, 44, 343-353.	0.1	3
131	Computational issues in solid boundary evaluation. Information Sciences, 1988, 44, 87-171.	4.0	2
132	Geometry of the ringed surfaces in $\langle \mathbb{R}^4 \rangle$ that generate spatial Pythagorean hodographs. Journal of Symbolic Computation, 2016, 73, 87-103.	0.5	2
133	Reduced difference polynomials and self-intersection computations. Applied Mathematics and Computation, 2018, 324, 174-190.	1.4	2
134	Feedrate modulation for accurate traversal of trimmed planar offset paths. International Journal of Advanced Manufacturing Technology, 2018, 97, 3325-3337.	1.5	2
135	Construction of periodic adapted orthonormal frames on closed space curves. Computer Aided Geometric Design, 2020, 76, 101802.	0.5	2
136	Identifying Pythagorean-Hodograph Curves Closest to Prescribed Planar Bézier Curves. CAD Computer Aided Design, 2022, 149, 103266.	1.4	2
137	Foreword to the Special Focus on Mathematics and Algorithms for CAM and CNC. Mathematics in Computer Science, 2012, 6, 267-268.	0.2	1
138	Minkowski products of unit quaternion sets. Advances in Computational Mathematics, 2019, 45, 1607-1629.	0.8	1
139	Spatial closed loops of prescribed arc length defined by Pythagorean-hodograph curves. Applied Mathematics and Computation, 2021, 391, 125653.	1.4	1
140	Accurate Real-time CNC Curve Interpolators Based Upon Richardson Extrapolation. CAD Computer Aided Design, 2021, 135, 103005.	1.4	1
141	Computing the Minkowski Value of the Exponential Function over a Complex Disk. Lecture Notes in Computer Science, 2007, , 1-21.	1.0	1
142	Planar projections of spatial Pythagorean-hodograph curves. Computer Aided Geometric Design, 2021, 91, 102049.	0.5	1
143	Suppression of chip load variations by real-time spindle speed modulation. International Journal of Advanced Manufacturing Technology, 2018, 99, 2005-2014.	1.5	0
144	Computing the roots of sparse high-degree polynomials that arise from the study of random simplicial complexes. Numerical Algorithms, 2020, 83, 1653-1670.	1.1	0

#	ARTICLE	IF	CITATIONS
145	Real-time needle guidance for venipuncture based on optical coherence tomography. Computer Methods in Biomechanics and Biomedical Engineering: Imaging and Visualization, 0, , 1-8.	1.3	0