

Robert J Webster

List of Publications by Year in descending order

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120
papers

6,336
citations

159585

30
h-index

85541

71
g-index

121
all docs

121
docs citations

121
times ranked

3332
citing authors

#	ARTICLE	IF	CITATIONS
1	Design and Kinematic Modeling of Constant Curvature Continuum Robots: A Review. International Journal of Robotics Research, 2010, 29, 1661-1683.	8.5	1,554
2	Statics and Dynamics of Continuum Robots With General Tendon Routing and External Loading. , 2011, 27, 1033-1044.		422
3	A Geometrically Exact Model for Externally Loaded Concentric-Tube Continuum Robots. IEEE Transactions on Robotics, 2010, 26, 769-780.	10.3	347
4	A Telerobotic System for Transnasal Surgery. IEEE/ASME Transactions on Mechatronics, 2014, 19, 996-1006.	5.8	231
5	Equilibrium Conformations of Concentric-tube Continuum Robots. International Journal of Robotics Research, 2010, 29, 1263-1280.	8.5	181
6	Swallowable medical devices for diagnosis and surgery: The state of the art. Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science, 2010, 224, 1397-1414.	2.1	133
7	A Flexure-Based Steerable Needle: High Curvature With Reduced Tissue Damage. IEEE Transactions on Biomedical Engineering, 2013, 60, 906-909.	4.2	121
8	Needle Steering in 3-D Via Rapid Replanning. IEEE Transactions on Robotics, 2014, 30, 853-864.	10.3	115
9	Concentric Tube Robots as Steerable Needles: Achieving Follow-the-Leader Deployment. IEEE Transactions on Robotics, 2015, 31, 246-258.	10.3	109
10	Concentric Tube Robots: The State of the Art and Future Directions. Springer Tracts in Advanced Robotics, 2016, , 253-269.	0.4	109
11	Debulking From Within: A Robotic Steerable Cannula for Intracerebral Hemorrhage Evacuation. IEEE Transactions on Biomedical Engineering, 2013, 60, 2567-2575.	4.2	100
12	Image-Guided Biopsy in the Era of Personalized Cancer Care: Proceedings from the Society of Interventional Radiology Research Consensus Panel. Journal of Vascular and Interventional Radiology, 2016, 27, 8-19.	0.5	87
13	Sliding Mode Control of Steerable Needles. IEEE Transactions on Robotics, 2013, 29, 1289-1299.	10.3	81
14	Design of a Bone-Attached Parallel Robot for Percutaneous Cochlear Implantation. IEEE Transactions on Biomedical Engineering, 2011, 58, 2904-2910.	4.2	78
15	Hand-held transendoscopic robotic manipulators: A transurethral laser prostate surgery case study. International Journal of Robotics Research, 2015, 34, 1559-1572.	8.5	73
16	Robot-like dexterity without computers and motors: a review of hand-held laparoscopic instruments with wrist-like tip articulation. Expert Review of Medical Devices, 2016, 13, 661-672.	2.8	67
17	A wrist for needle-sized surgical robots. , 2015, 2015, 1776-1781.		66
18	Accurate and Efficient Dynamics for Variable-Length Continuum Arms: A Center of Gravity Approach. Soft Robotics, 2015, 2, 96-106.	8.0	62

#	ARTICLE	IF	CITATIONS
19	Guiding Elastic Rods With a Robot-Manipulated Magnet for Medical Applications. IEEE Transactions on Robotics, 2017, 33, 227-233.	10.3	61
20	Design, Fabrication, and Testing of a Needle-Sized Wrist for Surgical Instruments. Journal of Medical Devices, Transactions of the ASME, 2017, 11, 0145011-145019.	0.7	59
21	A bimanual teleoperated system for endonasal skull base surgery. , 2011, , .		57
22	An Experimental Feasibility Study on Robotic Endonasal Telesurgery. Neurosurgery, 2015, 76, 479-484.	1.1	55
23	Elastic Stability of Concentric Tube Robots: A Stability Measure and Design Test. IEEE Transactions on Robotics, 2016, 32, 20-35.	10.3	53
24	Motion planning for active cannulas. , 2009, , .		51
25	Task-oriented design of concentric tube robots using mechanics-based models. , 2012, , .		51
26	Planning active cannula configurations through tubular anatomy. , 2010, , .		49
27	Toward Transoral Peripheral Lung Access: Combining Continuum Robots and Steerable Needles. Journal of Medical Robotics Research, 2017, 02, 1750001.	1.2	48
28	Minimally Invasive Holographic Surface Scanning for Soft-Tissue Image Registration. IEEE Transactions on Biomedical Engineering, 2010, 57, 1497-1506.	4.2	47
29	Comparison Study of Intraoperative Surface Acquisition Methods for Surgical Navigation. IEEE Transactions on Biomedical Engineering, 2013, 60, 1090-1099.	4.2	46
30	On the computational design of concentric tube robots: Incorporating volume-based objectives. , 2013, , .		44
31	A multi-arm hand-held robotic system for transurethral laser Prostate surgery. , 2014, , .		44
32	Design of a Tool Integrating Force Sensing With Automated Insertion in Cochlear Implantation. IEEE/ASME Transactions on Mechatronics, 2012, 17, 381-389.	5.8	41
33	Workspace characterization for concentric tube continuum robots. , 2014, , .		38
34	Rapid, Reliable Shape Setting of Superelastic Nitinol for Prototyping Robots. IEEE Robotics and Automation Letters, 2016, 1, 98-105.	5.1	38
35	Robotic Mastoidectomy. Otology and Neurotology, 2011, 32, 11-16.	1.3	35
36	A motion planning approach to automatic obstacle avoidance during concentric tube robot teleoperation. , 2015, 2015, 2361-2367.		34

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37	Through the Eustachian Tube and Beyond: A New Miniature Robotic Endoscope to See Into the Middle Ear. IEEE Robotics and Automation Letters, 2017, 2, 1488-1494.	5.1	34
38	A Dynamic Model for Concentric Tube Robots. IEEE Transactions on Robotics, 2020, 36, 1704-1718.	10.3	34
39	Magnetically Steered Robotic Insertion of Cochlear-Implant Electrode Arrays: System Integration and First-In-Cadaver Results. IEEE Robotics and Automation Letters, 2020, 5, 2240-2247.	5.1	32
40	Kinematics and calibration of active cannulas. , 2008, , .		30
41	Closed-loop control of soft continuum manipulators under tip follower actuation. International Journal of Robotics Research, 2021, 40, 923-938.	8.5	30
42	A modular, multi-arm concentric tube robot system with application to transnasal surgery for orbital tumors. International Journal of Robotics Research, 2021, 40, 521-533.	8.5	29
43	An Experimental Evaluation of the Force Requirements for Robotic Mastoidectomy. Otology and Neurotology, 2013, 34, e93-e102.	1.3	27
44	Designing snap-free concentric tube robots: A local bifurcation approach. , 2015, , .		27
45	Characterization and Control of a Pneumatic Motor for MR-Conditional Robotic Applications. IEEE/ASME Transactions on Mechatronics, 2017, 22, 2780-2789.	5.8	27
46	Forces Applied at the Skull Base during Transnasal Endoscopic Transsphenoidal Pituitary Tumor Excision. Journal of Neurological Surgery, Part B: Skull Base, 2013, 74, 337-341.	0.8	26
47	Motion planning for a three-stage multilumen transoral lung access system. , 2015, 2015, 3255-3261.		26
48	Toward haptic/aural touchscreen display of graphical mathematics for the education of blind students. , 2011, , .		25
49	Endonasal Skull Base Tumor Removal Using Concentric Tube Continuum Robots: A Phantom Study. Journal of Neurological Surgery, Part B: Skull Base, 2015, 76, 145-149.	0.8	25
50	A Compact, Bone-Attached Robot for Mastoidectomy. Journal of Medical Devices, Transactions of the ASME, 2015, 9, 0310031-310037.	0.7	24
51	A Concentric Tube Robot System for Rigid Bronchoscopy: A Feasibility Study on Central Airway Obstruction Removal. Annals of Biomedical Engineering, 2020, 48, 181-191.	2.5	23
52	Mechatronic Design of a Two-Arm Concentric Tube Robot System for Rigid Neuroendoscopy. IEEE/ASME Transactions on Mechatronics, 2020, 25, 1432-1443.	5.8	23
53	Robotic intracerebral hemorrhage evacuation: An in-scanner approach with concentric tube robots. , 2015, , .		22
54	Cadaveric Testing of Robot-Assisted Access to the Internal Auditory Canal for Vestibular Schwannoma Removal. Otology and Neurotology, 2017, 38, 441-447.	1.3	22

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55	Optimization of Curvilinear Needle Trajectories for Transforaminal Hippocampotomy. Operative Neurosurgery, 2017, 13, 15-22.	0.8	22
56	Center-of-Gravity-Based Approach for Modeling Dynamics of Multisection Continuum Arms. IEEE Transactions on Robotics, 2019, 35, 1097-1108.	10.3	22
57	Learning the Complete Shape of Concentric Tube Robots. IEEE Transactions on Medical Robotics and Bionics, 2020, 2, 140-147.	3.2	22
58	A study on the theoretical and practical accuracy of conoscopic holography-based surface measurements: toward image registration in minimally invasive surgery. International Journal of Medical Robotics and Computer Assisted Surgery, 2013, 9, 190-203.	2.3	20
59	A Manually Operated, Advance Off-Stylet Insertion Tool for Minimally Invasive Cochlear Implantation Surgery. IEEE Transactions on Biomedical Engineering, 2012, 59, 2792-2800.	4.2	18
60	Safe Motion Planning for Steerable Needles Using Cost Maps Automatically Extracted from Pulmonary Images. , 2018, 2018, 4942-4949.		17
61	A robot for transnasal surgery featuring needle-sized tentacle-like arms. Expert Review of Medical Devices, 2014, 11, 5-7.	2.8	16
62	Initial Experiments with the Leap Motion as a User Interface in Robotic Endonasal Surgery. Mechanisms and Machine Science, 2016, 37, 171-179.	0.5	16
63	Online Disturbance Estimation for Improving Kinematic Accuracy in Continuum Manipulators. IEEE Robotics and Automation Letters, 2020, 5, 2642-2649.	5.1	16
64	A REVIEW OF CONCENTRIC TUBE ROBOTS: MODELING, CONTROL, DESIGN, PLANNING, AND SENSING. , 2018, , 181-202.		16
65	Reconfigurable parallel continuum robots for incisionless surgery. , 2016, , .		15
66	Toward Improving Transurethral Prostate Surgery: Development and Initial Experiments with a Prototype Concentric Tube Robotic Platform. Journal of Endourology, 2016, 30, 692-696.	2.1	15
67	Comparing a Mechanical Analogue With the Da Vinci User Interface: Suturing at Challenging Angles. IEEE Robotics and Automation Letters, 2016, 1, 1060-1065.	5.1	15
68	A 3-D Volume Coverage Path Planning Algorithm With Application to Intracerebral Hemorrhage Evacuation. IEEE Robotics and Automation Letters, 2016, 1, 876-883.	5.1	15
69	Teleoperation and Contact Detection of a Waterjet-Actuated Soft Continuum Manipulator for Low-Cost Gastroscopy. IEEE Robotics and Automation Letters, 2020, 5, 6427-6434.	5.1	15
70	Comparing the accuracy of the da Vinci Xi and da Vinci Si for image guidance and automation. International Journal of Medical Robotics and Computer Assisted Surgery, 2020, 16, 1-10.	2.3	14
71	Can Elastic Instability Be Beneficial in Concentric Tube Robots?. IEEE Robotics and Automation Letters, 2018, 3, 1624-1630.	5.1	13
72	Toward image-guided partial nephrectomy with the da Vinci robot: exploring surface acquisition methods for intraoperative re-registration. , 2018, , .		13

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73	Making robots mill bone more like human surgeons: Using bone density and anatomic information to mill safely and efficiently. , 2016, 2016, 1837-1843.		12
74	Eyes in Ears: A Miniature Steerable Digital Endoscope for Trans-Nasal Diagnosis of Middle Ear Disease. Annals of Biomedical Engineering, 2021, 49, 219-232.	2.5	12
75	Transurethral Anastomosis After Transurethral Radical Prostatectomy: A Phantom Study on Intraluminal Suturing With Concentric Tube Robots. IEEE Transactions on Medical Robotics and Bionics, 2020, 2, 578-581.	3.2	12
76	Motion planning for continuum reconfigurable incisionless surgical parallel robots. , 2017, , .		11
77	Backward Planning for a Multi-Stage Steerable Needle Lung Robot. IEEE Robotics and Automation Letters, 2021, 6, 3987-3994.	5.1	11
78	Design and Analysis of a Small-Scale Magnetorheological Brake. IEEE/ASME Transactions on Mechatronics, 2022, 27, 3099-3109.	5.8	11
79	Real-Time Localization of Cochlear-Implant Electrode Arrays Using Bipolar Impedance Sensing. IEEE Transactions on Biomedical Engineering, 2022, 69, 718-724.	4.2	11
80	Design and control of a compact modular robot for transbronchial lung biopsy. , 2019, 10951, .		11
81	Mechanics-based modeling of bending and torsion in active cannulas. , 2008, , .		10
82	Mechanics of bending, torsion, and variable precurvature in multi-tube active cannulas. , 2009, , .		10
83	Magnetic Steering of Robotically Inserted Lateral-wall Cochlear-implant Electrode Arrays Reduces Forces on the Basilar Membrane In Vitro. Otology and Neurotology, 2021, 42, 1022-1030.	1.3	10
84	Coffee: the key to safer image-guided surgery—a granular jamming cap for non-invasive, rigid fixation of fiducial markers to the patient. International Journal of Computer Assisted Radiology and Surgery, 2017, 12, 1069-1077.	2.8	9
85	Decoupling Steerability From Diameter: Helical Dovetail Laser Patterning for Steerable Needles. IEEE Access, 2020, 8, 181411-181419.	4.2	9
86	Preliminary testing of a compact bone-attached robot for otologic surgery. , 2014, 9036, 903614.		8
87	Increasing safety of a robotic system for inner ear surgery using probabilistic error modeling near vital anatomy. Proceedings of SPIE, 2016, 9786, .	0.8	8
88	A Hand-Held Non-Robotic Surgical Tool With a Wrist and an Elbow. IEEE Transactions on Biomedical Engineering, 2019, 66, 3176-3184.	4.2	8
89	Beyond Constant Curvature: A New Mechanics Model for Unidirectional Notched-Tube Continuum Wrists. Journal of Medical Robotics Research, 2021, 06, 2140004.	1.2	8
90	Incorporating target registration error into robotic bone milling. , 2015, 9415, .		7

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91	Safety margins in robotic bone milling: from registration uncertainty to statistically safe surgeries. International Journal of Medical Robotics and Computer Assisted Surgery, 2017, 13, e1773.	2.3	7
92	Patient-specific, touch-based registration during robotic, image-guided partial nephrectomy. World Journal of Urology, 2022, 40, 671-677.	2.2	7
93	Kinematic Design Optimization of a Parallel Surgical Robot to Maximize Anatomical Visibility via Motion Planning. , 2018, , .		6
94	Accuracy of Touch-Based Registration During Robotic Image-Guided Partial Nephrectomy Before and After Tumor Resection in Validated Phantoms. Journal of Endourology, 2021, 35, 362-368.	2.1	6
95	Computational Optimization of Notch Spacing for a Transnasal Ear Endoscopy Continuum Robot. , 2020, , .		6
96	A novel method for texture-mapping conoscopic surfaces for minimally invasive image-guided kidney surgery. International Journal of Computer Assisted Radiology and Surgery, 2016, 11, 1515-1526.	2.8	5
97	Pre-operative Screening and Manual Drilling Strategies to Reduce the Risk of Thermal Injury During Minimally Invasive Cochlear Implantation Surgery. Annals of Biomedical Engineering, 2017, 45, 2184-2195.	2.5	4
98	Toward Practical and Accurate Touch-Based Image Guidance for Robotic Partial Nephrectomy. IEEE Transactions on Medical Robotics and Bionics, 2020, 2, 196-205.	3.2	4
99	Curving Clinical Biopsy Needles: Can We Steer Needles and Still Obtain Core Biopsy Samples?1. Journal of Medical Devices, Transactions of the ASME, 2016, 10, .	0.7	3
100	Follow-the-Leader Deployment of Steerable Needles Using a Magnetic Resonance-Compatible Robot With Stepper Actuators1. Journal of Medical Devices, Transactions of the ASME, 2016, 10, .	0.7	3
101	Design Considerations for a Steerable Needle Robot to Maximize Reachable Lung Volume. , 2021, 2021, .		3
102	A bimanual teleoperated system for endonasal skull base surgery. , 2011, , .		2
103	MRI-Compatible Fluid-Powered Medical Devices. Mechanical Engineering, 2013, 135, S13-S16.	0.1	2
104	Design of a Stiff Steerable Grasper for Sinus Surgery1. Journal of Medical Devices, Transactions of the ASME, 2014, 8, .	0.7	2
105	In vivo measurement of vocal fold surface resistance. Laryngoscope, 2017, 127, E364-E370.	2.0	2
106	Custom mastoid-fitting templates to improve cochlear implant electrode insertion trajectory. International Journal of Computer Assisted Radiology and Surgery, 2020, 15, 1713-1718.	2.8	2
107	The Vanderbilt Open-Source Ventilator: From Napkin Sketch to Ready to Save Lives in Three Weeks. IEEE Robotics and Automation Magazine, 2021, 28, 101-114.	2.0	2
108	A Teleoperated Surgical Robot System. Neuromethods, 2021, , 49-61.	0.3	2

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109	Steerable Needle Trajectory Following in the Lung: Torsional Deadband Compensation and Full Pose Estimation With 5DOF Feedback for Needles Passing Through Flexible Endoscopes. , 2020, 2020, .		2
110	Targeting Epilepsy Through the Foremen Ovale: How Many Helical Needles are Needed?. Annals of Biomedical Engineering, 2022, 50, 499-506.	2.5	2
111	Design of an Endonasal Graft Placement Tool for Repair of Skull Base Defects. Journal of Medical Devices, Transactions of the ASME, 2013, 7, .	0.7	1
112	A Bronchial Puncture Mechanism for Transoral Access to the Lung Parenchyma ¹ . Journal of Medical Devices, Transactions of the ASME, 2015, 9, .	0.7	1
113	A Disposable Robot for Intracerebral Hemorrhage Removal ¹ . Journal of Medical Devices, Transactions of the ASME, 2016, 10, .	0.7	1
114	Design and Thermal Testing of an Automatic Drill Guide for Less Invasive Cochlear Implantation ¹ . Journal of Medical Devices, Transactions of the ASME, 2016, 10, .	0.7	1
115	Clinical Translation of an Insertion Tool for Minimally Invasive Cochlear Implant Surgery. Journal of Medical Devices, Transactions of the ASME, 2021, 15, 031001.	0.7	1
116	A Recurrent Neural Network Approach to Roll Estimation for Needle Steering. Springer Proceedings in Advanced Robotics, 2021, 19, 334-342.	1.3	1
117	Towards Suturing From Within the Urethra Using Concentric Tube Robots: First Experiences in Biological Tissues. , 2022, , .		1
118	Design of a Safer Tracheostomy Tube ¹ . Journal of Medical Devices, Transactions of the ASME, 2015, 9, .	0.7	0
119	A multi-subject accuracy study on granular jamming for non-invasive attachment of fiducial markers to patients. International Journal of Computer Assisted Radiology and Surgery, 2020, 15, 69-74.	2.8	0
120	Transeustachian Middle Ear Endoscopy Using a Steerable Distal-Camera Tipped Endoscope. Otology and Neurotology, 2021, Publish Ahead of Print, .	1.3	0