

Haruhiko Asada

List of Publications by Year in descending order

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145
papers

3,718
citations

257450

24
h-index

197818

49
g-index

146
all docs

146
docs citations

146
times ranked

3513
citing authors

#	ARTICLE	IF	CITATIONS
1	Mobile monitoring with wearable photoplethysmographic biosensors. IEEE Engineering in Medicine and Biology Magazine, 2003, 22, 28-40.	0.8	372
2	Three-dimensionally printed biological machines powered by skeletal muscle. Proceedings of the National Academy of Sciences of the United States of America, 2014, 111, 10125-10130.	7.1	357
3	A Geometrical Representation of Manipulator Dynamics and Its Application to Arm Design. Journal of Dynamic Systems, Measurement and Control, Transactions of the ASME, 1983, 105, 131-142.	1.6	281
4	Analysis and Design of a Direct-Drive Arm With a Five-Bar-Link Parallel Drive Mechanism. Journal of Dynamic Systems, Measurement and Control, Transactions of the ASME, 1984, 106, 225-230.	1.6	163
5	A New Method for Identifying Orders of Input-Output Models for Nonlinear Dynamic Systems. , 1993, , .		155
6	Large Effective-Strain Piezoelectric Actuators Using Nested Cellular Architecture With Exponential Strain Amplification Mechanisms. IEEE/ASME Transactions on Mechatronics, 2010, 15, 770-782.	5.8	120
7	Dll4-containing exosomes induce capillary sprout retraction in a 3D microenvironment. Scientific Reports, 2014, 4, 4031.	3.3	94
8	Computational modeling of three-dimensional ECM-rigidity sensing to guide directed cell migration. Proceedings of the National Academy of Sciences of the United States of America, 2018, 115, E390-E399.	7.1	88
9	Demonstration-based control of supernumerary robotic limbs. , 2012, , .		81
10	Active noise cancellation using MEMS accelerometers for motion-tolerant wearable bio-sensors. , 2004, 2004, 2157-60.		73
11	Supernumerary Robotic Limbs for Human Body Support. IEEE Transactions on Robotics, 2016, 32, 301-311.	10.3	72
12	Supernumerary Robotic Limbs for aircraft fuselage assembly: Body stabilization and guidance by bracing. , 2014, , .		69
13	A robot on the shoulder: Coordinated human-wearable robot control using Coloured Petri Nets and Partial Least Squares predictions. , 2014, , .		63
14	Bracing the human body with supernumerary Robotic Limbs for physical assistance and load reduction. , 2014, , .		61
15	Cell Invasion Dynamics into a Three Dimensional Extracellular Matrix Fibre Network. PLoS Computational Biology, 2015, 11, e1004535.	3.2	60
16	Mag-Foot: A steel bridge inspection robot. , 2009, , .		54
17	Design and control of Supernumerary Robotic Limbs for balance augmentation. , 2015, , .		54
18	Implicit and Intuitive Grasp Posture Control for Wearable Robotic Fingers: A Data-Driven Method Using Partial Least Squares. IEEE Transactions on Robotics, 2016, 32, 176-186.	10.3	53

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19	A process engineering approach to increase organoid yield. <i>Development</i> (Cambridge), 2017, 144, 1128-1136.	2.5	51
20	Concurrent Design Optimization of Mechanical Structure and Control for High Speed Robots. <i>Journal of Dynamic Systems, Measurement and Control, Transactions of the ASME</i> , 1994, 116, 344-356.	1.6	48
21	Mathematical analysis of oxygen transfer through polydimethylsiloxane membrane between double layers of cell culture channel and gas chamber in microfluidic oxygenator. <i>Microfluidics and Nanofluidics</i> , 2013, 15, 285-296.	2.2	48
22	A dual-use visible light approach to integrated communication and localization of underwater robots with application to non-destructive nuclear reactor inspection. , 2012, , .		46
23	Bio-Artificial Synergies for Grasp Posture Control of Supernumerary Robotic Fingers. , 0, , .		46
24	A Variable Stiffness PZT Actuator Having Tunable Resonant Frequencies. <i>IEEE Transactions on Robotics</i> , 2010, 26, 993-1005.	10.3	45
25	Co-Simulation of Algebraically Coupled Dynamic Subsystems Without Disclosure of Proprietary Subsystem Models. <i>Journal of Dynamic Systems, Measurement and Control, Transactions of the ASME</i> , 2004, 126, 1-13.	1.6	40
26	A compact, maneuverable, underwater robot for direct inspection of nuclear power piping systems. , 2012, , .		35
27	The Winch-Bot: A cable-suspended, under-actuated robot utilizing parametric self-excitation. , 2009, , .		34
28	Dynamic Analysis of Noncollocated Flexible Arms and Design of Torque Transmission Mechanisms. <i>Journal of Dynamic Systems, Measurement and Control, Transactions of the ASME</i> , 1994, 116, 201-207.	1.6	33
29	Low Variance Adaptive Filter for Cancelling Motion Artifact in Wearable Photoplethysmogram Sensor Signals. <i>Annual International Conference of the IEEE Engineering in Medicine and Biology Society</i> , 2007, 2007, 652-5.	0.5	32
30	Supernumerary Robotic Limbs to Assist Human Walking With Load Carriage. <i>Journal of Mechanisms and Robotics</i> , 2020, 12, .	2.2	32
31	A Data-Driven Approach to Prediction and Optimal Bucket-Filling Control for Autonomous Excavators. <i>IEEE Robotics and Automation Letters</i> , 2020, 5, 2682-2689.	5.1	31
32	Otariidae-Inspired Soft-Robotic Supernumerary Flippers by Fabric Kirigami and Origami. <i>IEEE/ASME Transactions on Mechatronics</i> , 2021, 26, 2747-2757.	5.8	31
33	A Linkage Design for Direct-Drive Robot Arms. <i>Journal of Mechanisms, Transmissions, and Automation in Design</i> , 1985, 107, 536-540.	0.2	30
34	Nonlinear Feedback Control of a Gravity-Assisted Underactuated Manipulator With Application to Aircraft Assembly. <i>IEEE Transactions on Robotics</i> , 2009, 25, 1125-1133.	10.3	28
35	Adaptive hydrostatic blood pressure calibration: Development of a wearable, autonomous pulse wave velocity blood pressure monitor. <i>Annual International Conference of the IEEE Engineering in Medicine and Biology Society</i> , 2007, 2007, 370-3.	0.5	27
36	The MantisBot: Design and impedance control of supernumerary robotic limbs for near-ground work. , 2017, , .		27

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37	Hybrid Open-Loop Closed-Loop Control of Coupled Human-Robot Balance During Assisted Stance Transition With Extra Robotic Legs. IEEE Robotics and Automation Letters, 2019, 4, 1676-1683.	5.1	26
38	Extracellular matrix remodelling induced by alternating electrical and mechanical stimulations increases the contraction of engineered skeletal muscle tissues. Scientific Reports, 2019, 9, 2732.	3.3	24
39	Leveraging the Human Operator in the Design and Control of Supernumerary Robotic Limbs. IEEE Robotics and Automation Letters, 2020, 5, 2177-2184.	5.1	24
40	Blind System Identification of Noncoprime Multichannel Systems and Its Application to Noninvasive Cardiovascular Monitoring. Journal of Dynamic Systems, Measurement and Control, Transactions of the ASME, 2004, 126, 834-847.	1.6	23
41	Design of Extra Robotic Legs for Augmenting Human Payload Capabilities by Exploiting Singularity and Torque Redistribution. , 2018, , .		21
42	A Model-Free Extremum-Seeking Approach to Autonomous Excavator Control Based on Output Power Maximization. IEEE Robotics and Automation Letters, 2019, 4, 1005-1012.	5.1	21
43	Design and Analysis of 6-DOF Triple Scissor Extender Robots With Applications in Aircraft Assembly. IEEE Robotics and Automation Letters, 2017, 2, 1420-1427.	5.1	20
44	Empirical characterization of modular variable stiffness inflatable structures for supernumerary grasp-assist devices. International Journal of Robotics Research, 2017, 36, 1391-1413.	8.5	20
45	Blind Identification of Two-Channel IIR Systems With Application to Central Cardiovascular Monitoring. Journal of Dynamic Systems, Measurement and Control, Transactions of the ASME, 2009, 131, .	1.6	19
46	The eyeball ROV: Design and control of a spherical underwater vehicle steered by an internal eccentric mass. , 2011, , .		19
47	Dynamic Analysis and Design of Spheroidal Underwater Robots for Precision Multidirectional Maneuvering. IEEE/ASME Transactions on Mechatronics, 2015, 20, 2890-2902.	5.8	19
48	Supernumerary Robotic Fingers: An Alternative Upper-Limb Prosthesis. , 2014, , .		18
49	Modeling and Balance Control of Supernumerary Robotic Limb for Overhead Tasks. IEEE Robotics and Automation Letters, 2021, 6, 4125-4132.	5.1	18
50	Supernumerary Robotic Limbs for Human Augmentation in Overhead Assembly Tasks. , 0, , .		18
51	Modeling, Realization, and Simulation of Thermo-Fluid Systems Using Singularly Perturbed Sliding Manifolds. Journal of Dynamic Systems, Measurement and Control, Transactions of the ASME, 2000, 122, 699-707.	1.6	15
52	An Underactuated, Magnetic-Foot Robot for Steel Bridge Inspection. Journal of Mechanisms and Robotics, 2010, 2, .	2.2	15
53	A Mobile Extendable Robot Arm: Singularity Analysis and Design. , 2019, , .		15
54	Inherent Haptic Feedback From Supernumerary Robotic Limbs. IEEE Transactions on Haptics, 2021, 14, 123-131.	2.7	15

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55	Autonomous Excavation of Rocks Using a Gaussian Process Model and Unscented Kalman Filter. IEEE Robotics and Automation Letters, 2020, 5, 2491-2497.	5.1	14
56	A ball-shaped underwater robot for direct inspection of nuclear reactors and other water-filled infrastructure. , 2013, , .		13
57	Supernumerary Robotic Fingers as a Therapeutic Device for Hemiparetic Patients. , 2015, , .		13
58	Triple Scissor Extender Robot Arm: A Solution to the Last One Foot Problem of Manipulation. IEEE Robotics and Automation Letters, 2018, 3, 3975-3982.	5.1	13
59	Design of a Novel Multiple-DOF Extendable Arm With Rigid Components Inspired by a Deployable Origami Structure. IEEE Robotics and Automation Letters, 2020, 5, 2730-2737.	5.1	13
60	A compact underwater vehicle using high-bandwidth coanda-effect valves for low speed precision maneuvering in cluttered environments. , 2011, , .		12
61	MPC Performances for Nonlinear Systems Using Several Linearization Models. , 2020, , .		12
62	Design of PZT cellular actuators with power-law strain amplification. , 2007, , .		10
63	Long-chain glucosylceramides crosstalk with LYN mediates endometrial cell migration. Biochimica Et Biophysica Acta - Molecular and Cell Biology of Lipids, 2018, 1863, 71-80.	2.4	10
64	Variable Stiffness Pneumatic Structures for Wearable Supernumerary Robotic Devices. Springer Proceedings in Advanced Robotics, 2018, , 201-217.	1.3	10
65	Transfer of Human Skills to Robots: Learning from Human Demonstrations for Building an Adaptive Control System. , 1992, , .		10
66	Broadcast Feedback for Stochastic Cellular Actuator Systems Consisting of Nonuniform Actuator Units. Proceedings - IEEE International Conference on Robotics and Automation, 2007, , .	0.0	9
67	Broadcast feedback control of cell populations using stochastic Lyapunov functions with application to angiogenesis regulation. , 2008, , .		9
68	Identification of Multichannel Cardiovascular Dynamics Using Dual Laguerre Basis Functions for Noninvasive Cardiovascular Monitoring. IEEE Transactions on Control Systems Technology, 2010, 18, 170-176.	5.2	9
69	Quantification of Magnetically Induced Changes in ECM Local Apparent Stiffness. Biophysical Journal, 2014, 106, 332-341.	0.5	9
70	Dual Faceted Linearization of Nonlinear Dynamical Systems Based on Physical Modeling Theory. Journal of Dynamic Systems, Measurement and Control, Transactions of the ASME, 2019, 141, .	1.6	9
71	Dynamic Modeling of Bucket-Soil Interactions Using Koopman-DFL Lifting Linearization for Model Predictive Contouring Control of Autonomous Excavators. IEEE Robotics and Automation Letters, 2022, 7, 151-158.	5.1	9
72	Tracking of cell population from time lapse and end point confocal microscopy images with multiple hypothesis Kalman smoothing filters. , 2010, , .		8

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73	Decoupled Motion Control of Wearable Robot for Rejecting Human Induced Disturbances. , 2018, , .		8
74	Robotic Cane as a Soft SuperLimb for Elderly Sit-to-Stand Assistance*. , 2020, , .		8
75	Integrated Voluntary-Reactive Control of a Human-SuperLimb Hybrid System for Hemiplegic Patient Support. IEEE Robotics and Automation Letters, 2021, 6, 1646-1653.	5.1	8
76	Multicell migration tracking within angiogenic networks by deep learning-based segmentation and augmented Bayesian filtering. Journal of Medical Imaging, 2018, 5, 1.	1.5	8
77	Concurrent Design Optimization of Mechanical Structure and Control for High Speed Robots. , 1993, , .		7
78	Stochastic Optimal Control Laws for Cellular Artificial Muscles. Proceedings - IEEE International Conference on Robotics and Automation, 2007, , .	0.0	7
79	Dynamic analysis of a high-bandwidth, large-strain, PZT cellular muscle actuator with layered strain amplification. , 2008, , .		7
80	Scaling up shape memory alloy actuators using a recruitment control architecture. , 2010, , .		7
81	Co-fabrication of live skeletal muscles as actuators in A millimeter scale mechanical system. , 2011, , .		7
82	Design of a Growing Robot Inspired by Plant Growth. , 2019, , .		7
83	Learning of Causal Observable Functions for Koopman-DFL Lifting Linearization of Nonlinear Controlled Systems and Its Application to Excavation Automation. IEEE Robotics and Automation Letters, 2021, 6, 6297-6304.	5.1	7
84	A computational modeling of invadopodia protrusion into an extracellular matrix fiber network. Scientific Reports, 2022, 12, 1231.	3.3	7
85	Static lumped parameter model for nested PZT cellular actuators with exponential strain amplification mechanisms. , 2008, , .		6
86	Determining Cell Fate Transition Probabilities to VEGF/Ang 1 Levels: Relating Computational Modeling to Microfluidic Angiogenesis Studies. Cellular and Molecular Bioengineering, 2010, 3, 345-360.	2.1	6
87	Cellular Stochastic Control of the Collective Output of a Class of Distributed Hysteretic Systems. Journal of Dynamic Systems, Measurement and Control, Transactions of the ASME, 2011, 133, .	1.6	6
88	Omni-Egg: A smooth, spheroidal, appendage free underwater robot capable of 5 DOF motions. , 2012, , .		6
89	Design for precision multi-directional maneuverability: Egg-shaped underwater robots for infrastructure inspection. , 2014, , .		6
90	Characterization of uniaxial stiffness of extracellular matrix embedded with magnetic beads via bio-conjugation and under the influence of an external magnetic field. Journal of the Mechanical Behavior of Biomedical Materials, 2014, 30, 253-265.	3.1	6

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91	Localized Manipulation of Magnetic Particles in an Ensemble. IEEE Access, 2018, 6, 24075-24088.	4.2	6
92	Model Predictive Control and Transfer Learning of Hybrid Systems Using Lifting Linearization Applied to Cable Suspension Systems. IEEE Robotics and Automation Letters, 2022, 7, 682-689.	5.1	6
93	Broadcast Feedback of Large-Scale, Distributed Stochastic Control Systems Inspired by Biological Muscle Control. Proceedings of the American Control Conference, 2007, , .	0.0	5
94	A multi-cell piezoelectric device for tunable resonance actuation and energy harvesting. , 2010, , .		5
95	In vivo label-free quantification of liver microcirculation using dual-modality microscopy. Journal of Biomedical Optics, 2014, 19, 116006.	2.6	5
96	Multi-cell ECM compaction is predictable via superposition of nonlinear cell dynamics linearized in augmented state space. PLoS Computational Biology, 2019, 15, e1006798.	3.2	5
97	Precision Assembly of Heavy Objects Suspended With Multiple Cables From a Crane. IEEE Robotics and Automation Letters, 2020, 5, 6876-6883.	5.1	5
98	Safe Tumbling of Heavy Objects Using a Two-Cable Crane. IEEE Robotics and Automation Letters, 2021, 6, 1082-1089.	5.1	5
99	Approximated stochastic model predictive control using statistical linearization of nonlinear dynamical system in latent space. , 2016, , .		5
100	Valve-PWM control of integrated pump-valve propulsion systems for highly maneuverable underwater vehicles. , 2012, , .		4
101	Automated tracking of cells from phase contrast images by multiple hypothesis Kalman filters. , 2015, , .		4
102	Triple Scissor Extender: A 6-DOF lifting and positioning robot. , 2016, , .		4
103	Causality in dual faceted linearization of nonlinear dynamical systems. , 2018, , .		4
104	A Robotic Microscope System to Examine T Cell Receptor Acuity Against Tumor Neoantigens: A New Tool for Cancer Immunotherapy Research. IEEE Robotics and Automation Letters, 2019, 4, 1760-1767.	5.1	4
105	Design of a Fail-Safe Wearable Robot with Novel Extendable Arms for Ergonomic Accommodation during Floor Work. , 2019, , .		4
106	TeachBot: Towards teaching robotics fundamentals for human-robot collaboration at work. Heliyon, 2021, 7, e07583.	3.2	4
107	Acquisition of Task Performance Skills from a Human Expert for Teaching a Machining Robot. , 1990, , .		4
108	Stochastic recruitment: Controlling state distribution among swarms of hybrid agents. , 2008, , .		3

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109	A data-driven approach to precise linearization of nonlinear dynamical systems in augmented latent space. , 2016, , .		3
110	Musculoskeletal Load Analysis for the Design and Control of a Wearable Robot Bracing the Human Body While Crawling on a Floor. IEEE Access, 2022, 10, 6814-6829.	4.2	3
111	Dynamic Analysis of Noncollocated Flexible Arms and Design of Torque Transmission Mechanisms. , 1991, , .		2
112	A stochastic control framework for regulating collective behaviors of an angiogenesis cell population. , 2008, , .		2
113	An Optical External Localization System and Applications to Indoor Tracking. , 2008, , .		2
114	Stable control of distributed hysteretic systems using cellular broadcast stochastic feedback. , 2009, , .		2
115	Continuous path tracing by a cable-suspended, under-actuated robot: The Winch-Bot. , 2010, , .		2
116	Harmonic PZT poly-actuators. , 2014, , .		2
117	Control Strategy for Jam and Wedge-Free 3D Precision Insertion of Heavy Objects Suspended With a Multi-Cable Crane. IEEE Robotics and Automation Letters, 2021, 6, 7453-7460.	5.1	2
118	An extendable continuum robot arm using a flexible screw as a backbone to propel inside a confined space with discontinuous contact area. Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science, 2022, 236, 9929-9940.	2.1	2
119	Transfer of Human Preference to Smart Machines: A Case Study of Human Thermal Comfort Control. , 1990, , .		1
120	Design and Analysis of Flexible Arms for Minimum-Phase Endpoint Control. , 1990, , .		1
121	A Humanoid Foot with Polypyrrole Conducting Polymer Artificial Muscles for Energy Dissipation and Storage. Proceedings - IEEE International Conference on Robotics and Automation, 2007, , .	0.0	1
122	Equilibrium point control of artificial muscles using recruitment of many motor units. , 2008, , .		1
123	Estimation of state-transition probability matrices in asynchronous population Markov processes. , 2010, , .		1
124	Stochastic tracking of migrating live cells interacting with 3D gel environment using augmented-space particle filters. , 2011, , .		1
125	Simultaneous tracking of cell nuclei and conduit parameters from time-lapse confocal microscopy images. , 2011, , .		1
126	Molecular signaling observer and predictor: A framework for closed-loop control of cell behaviors having long time delay. , 2011, , .		1

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127	Maximizing output work of PZT stacks while gaining large displacement amplification. , 2013, , .		1
128	A multi-track elevator system for E-commerce fulfillment centers. , 2017, , .		1
129	Design and Time-Optimal Control of a High-Speed High-Torque Dual-Motor Actuator. , 2020, , .		1
130	Crawling Support Using Wearable SuperLimbs: Human-Robot Synchronization and Metabolic Cost Assessment. , 2021, , .		1
131	Noise Cancellation Model Validation for Reduced Motion Artifact Wearable PPG Sensors Using MEMS Accelerometers. Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 2006, , .	0.5	1
132	Design of surface wave active beds based on human tissue physiology. Advanced Robotics, 2001, 14, 717-742.	1.8	0
133	Sensitivity and Variance Analysis of Arterial Pressure Transfer Dynamics Estimated from Adaptive Multi-Channel System Identification. Proceedings of the American Control Conference, 2007, , .	0.0	0
134	Concurrent Multi-Link Deployment of a Gravity-Assisted Underactuated Snake Robot for Aircraft Assembly. , 2008, , .		0
135	Stochastic control of population dynamics using Kalman filtering with applications to artificial muscle recruitment. , 2009, , .		0
136	Optogenetic control of live skeletal muscles: Non-invasive, wireless, and precise activation of muscle tissues. , 2013, , .		0
137	A reduced order systems approach to prediction of emergent behaviors of cellular systems. , 2016, , .		0
138	Dynamic modeling of cancer cell migration in an extracellular matrix fiber network. , 2017, , .		0
139	Intelligent Control Using Active-Adaptive Information Sources. , 1993, , .		0
140	Wearable, Cuff-less PPG-Based Blood Pressure Monitor with Novel Height Sensor. Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 2006, , .	0.5	0
141	Dimensionality reduction of cellular actuator arrays using the concept of synergy for driving a robotic hand. Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 2006, , .	0.5	0
142	Reconstruction of Central Aortic Pressure Waveform Using Adaptive Multi-Channel Identification. Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 2006, , .	0.5	0
143	Stochastic optimization of a chain sliding mode controller for the mobile robot maneuvering. , 2011, , .		0
144	Horizontal Insertion of a Ring Onto a Shaft Using a Gantry Crane With Minimal Sensors. IEEE Robotics and Automation Letters, 2022, 7, 7271-7278.	5.1	0

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145	Monitoring the Mental State of Cooperativeness for Guiding an Elderly Person in Sit-to-Stand Assistance. , 2022, , .		0