Adam Wittek

List of Publications by Year
in descending order

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111 papers	2,587 citations	185998 28 h-index	205818 48 g-index
116 all docs	116 docs citations	116 times ranked	1571 citing authors

#	Article	IF	Citations
1	Total Lagrangian explicit dynamics finite element algorithm for computing soft tissue deformation. Communications in Numerical Methods in Engineering, 2006, 23, 121-134.	1.3	227
2	Patient-specific model of brain deformation: Application to medical image registration. Journal of Biomechanics, 2007, 40, 919-929.	0.9	189
3	Real-time nonlinear finite element computations on GPU â€“ Application to neurosurgical simulation. Computer Methods in Applied Mechanics and Engineering, 2010, 199, 3305-3314.	3.4	150
4	On the unimportance of constitutive models in computing brain deformation for image-guided surgery. Biomechanics and Modeling in Mechanobiology, 2009, 8, 77-84.	1.4	99
5	Suite of finite element algorithms for accurate computation of soft tissue deformation for surgical simulation. Medical Image Analysis, 2009, 13, 912-919.	7.0	91
6	A meshless Total Lagrangian explicit dynamics algorithm for surgical simulation. International Journal for Numerical Methods in Biomedical Engineering, 2010, 26, 977-998.	1.0	81
7	Biomechanical modelling of normal pressure hydrocephalus. Journal of Biomechanics, 2008, 41, 2263-2271.	0.9	77
8	Patient-specific non-linear finite element modelling for predicting soft organ deformation in real-time; Application to non-rigid neuroimage registration. Progress in Biophysics and Molecular Biology, 2010, 103, 292-303.	1.4	74
9	A simple, effective and clinically applicable method to compute abdominal aortic aneurysm wall stress. Journal of the Mechanical Behavior of Biomedical Materials, 2016, 58, 139-148.	1.5	73
10	Computation of intra-operative brain shift using dynamic relaxation. Computer Methods in Applied Mechanics and Engineering, 2009, 198, 3313-3320.	3.4	65
11	Modelling brain deformations for computerâ€integrated neurosurgery. International Journal for Numerical Methods in Biomedical Engineering, 2010, 26, 117-138.	1.0	59
12	An adaptive dynamic relaxation method for solving nonlinear finite element problems. Application to brain shift estimation. International Journal for Numerical Methods in Biomedical Engineering, 2011, 27, 173-185.	1.0	57
13	A three-dimensional nonlinear meshfree algorithm for simulating mechanical responses of soft tissue. Engineering Analysis With Boundary Elements, 2014, 42, 60-66.	2.0	57
14	BioPARR: A software system for estimating the rupture potential index for abdominal aortic aneurysms. Scientific Reports, 2017, 7, 4641.	1.6	53
15	Modified moving least squares with polynomial bases for scattered data approximation. Applied Mathematics and Computation, 2015, 266, 893-902.	1.4	52
16	From Finite Element Meshes to Clouds of Points: A Review of Methods for Generation of Computational Biomechanics Models for Patient-Specific Applications. Annals of Biomedical Engineering, 2016, 44, 3-15.	1.3	52
17	Suite of meshless algorithms for accurate computation of soft tissue deformation for surgical simulation. Medical Image Analysis, 2019, 56, 152-171.	7.0	52
18	Nonâ€locking tetrahedral finite element for surgical simulation. Communications in Numerical Methods in Engineering, 2009, 25, 827-836.	1.3	50

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19	Brain Shift Computation Using a Fully Nonlinear Biomechanical Model. Lecture Notes in Computer Science, 2005, 8, 583-590.	1.0	49
20	Beyond finite elements: A comprehensive, patient-specific neurosurgical simulation utilizing a meshless method. Journal of Biomechanics, 2012, 45, 2698-2701.	0.9	40
21	Meshless algorithm for soft tissue cutting in surgical simulation. Computer Methods in Biomechanics and Biomedical Engineering, 2014, 17, 800-811.	0.9	40
22	Prediction of brain deformations and risk of traumatic brain injury due to closed-head impact: quantitative analysis of the effects of boundary conditions and brain tissue constitutive model. Biomechanics and Modeling in Mechanobiology, 2018, 17, 1165-1185.	1.4	39
23	Subject-specific non-linear biomechanical model of needle insertion into brain. Computer Methods in Biomechanics and Biomedical Engineering, 2008, 11, 135-146.	0.9	37
24	More accurate neuronavigation data provided by biomechanical modeling instead of rigid registration. Journal of Neurosurgery, 2014, 120, 1477-1483.	0.9	37
25	An efficient hourglass control implementation for the uniform strain hexahedron using the Total Lagrangian formulation. Communications in Numerical Methods in Engineering, 2008, 24, 1315-1323.	1.3	35
26	Biomechanical Model as a Registration Tool for Image-Guided Neurosurgery: Evaluation Against BSpline Registration. Annals of Biomedical Engineering, 2013, 41, 2409-2425.	1.3	34
27	Evaluation of the head protection effectiveness of cyclist helmets using full-scale computational biomechanics modelling of cycling accidents. Journal of Safety Research, 2022, 80, 109-134.	1.7	34
28	Patientâ€specific computational biomechanics of the brain without segmentation and meshing. International Journal for Numerical Methods in Biomedical Engineering, 2013, 29, 293-308.	1.0	33
29	Compression testing of very soft biological tissues using semi-confined configurationâ€”A word of caution. Journal of Biomechanics, 2008, 41, 235-238.	0.9	31
30	Real-Time Prediction of Brain Shift Using Nonlinear Finite Element Algorithms. Lecture Notes in Computer Science, 2009, 12, 300-307.	1.0	28
31	Stable time step estimates for meshâ€free particle methods. International Journal for Numerical Methods in Engineering, 2012, 91, 450-456.	1.5	25
32	Adaptive numerical integration in Element-Free Galerkin methods for elliptic boundary value problems. Engineering Analysis With Boundary Elements, 2015, 51, 52-63.	2.0	25
33	Parametric Study of Effects of Brain-Skull Boundary Conditions and Brain Material Properties on Responses of Simplified Finite Element Brain Model under Angular Acceleration Impulse in Sagittal Plane. JSME International Journal Series C-Mechanical Systems Machine Elements and Manufacturing, 2003, 46, 1388-1399.	0.3	23
34	A new method for essential boundary conditions imposition in explicit meshless methods. Engineering Analysis With Boundary Elements, 2017, 80, 94-104.	2.0	20
35	Biomechanical modeling and computer simulation of the brain during neurosurgery. International Journal for Numerical Methods in Biomedical Engineering, 2019, 35, e3250.	1.0	20
36	Analysis and comparison of reflex times and electromyogram of cervical muscles under impact loading using surface and fine-wire electrodes. IEEE Transactions on Biomedical Engineering, 2001, 48, 143-153.	2.5	19

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37	3D analysis of cervical spine kinematic: effect of age and gender in healthy subjects. Computer Methods in Biomechanics and Biomedical Engineering, 2008, 11, 135-136.	0.9	19
38	Patient-specific biomechanical model as whole-body CT image registration tool. Medical Image Analysis, 2015, 22, 22-34.	7.0	18
39	On the appropriateness of modelling brain parenchyma as a biphasic continuum. Journal of the Mechanical Behavior of Biomedical Materials, 2016, 61, 511-518.	1.5	18
40	Biomechanical model for computing deformations for wholeâ€body image registration: A meshless approach. International Journal for Numerical Methods in Biomedical Engineering, 2016, 32, e02771.	1.0	18
41	Prediction of pedestrian brain injury due to vehicle impact using computational biomechanics models: Are head-only models sufficient?. Traffic Injury Prevention, 2020, 21, 102-107.	0.6	18
42	An Element Free Galerkin Method Based on the Modified Moving Least Squares Approximation. Journal of Scientific Computing, 2017, 71, 1197-1211.	1.1	17
43	Biomechanical Modeling of the Brain for Computer-Assisted Neurosurgery. Biological and Medical Physics Series, 2011, , 111-136.	0.3	17
44	Strong-form approach to elasticity: Hybrid finite difference-meshless collocation method (FDMCM). Applied Mathematical Modelling, 2018, 57, 316-338.	2.2	16
45	Computational monitoring in real time: review of methods and applications. Geomechanics and Geophysics for Geo-Energy and Geo-Resources, 2018, 4, 235-271.	1.3	16
46	Simple and robust element-free Galerkin method with almost interpolating shape functions for finite deformation elasticity. Applied Mathematical Modelling, 2021, 96, 284-303.	2.2	16
47	Pedestrian kinematics due to impacts by various passenger cars using full-scale dummy. International Journal of Vehicle Safety, 2005, 1, 64.	0.2	14
48	Towards measuring neuroimage misalignment. Computers in Biology and Medicine, 2015, 64, 12-23.	3.9	13
49	Is There a Relationship Between Stress in Walls of Abdominal Aortic Aneurysm and Symptoms?. Journal of Surgical Research, 2020, 252, 37-46.	0.8	12
50	Implementation of a Modified Moving Least Squares Approximation for Predicting Soft Tissue Deformation Using a Meshless Method. , 2015, , 59-71.		10
51	Mathematical modeling and computer simulation of needle insertion into soft tissue. PLoS ONE, 2020, 15, e0242704.	1.1	10
52	Should anthropometric differences between the commonly used pedestrian computational biomechanics models and Chinese population be taken into account when predicting pedestrian head kinematics and injury in vehicle collisions in China?. Accident Analysis and Prevention, 2022, 173, 106718.	3.0	10
53	Cellular automata coupled with steadyâ€state nutrient solution permit simulation of largeâ€scale growth of tumours. International Journal for Numerical Methods in Biomedical Engineering, 2013, 29, 542-559.	1.0	9
54	Numerical investigations of rib fracture failure models in different dynamic loading conditions. Computer Methods in Biomechanics and Biomedical Engineering, 2016, 19, 527-537.	0.9	9

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55	An Explicit Meshless Point Collocation Solver for Incompressible Navier-Stokes Equations. Fluids, 2019, 4, 164.	0.8	9
56	Hydrodynamic modeling and performance analysis of bio-inspired swimming. Ocean Engineering, 2020, 197, 106897.	1.9	9
57	Efficient Inverse Isoparametric Mapping Algorithm for Whole-Body Computed Tomography Registration Using Deformations Predicted by Nonlinear Finite Element Modeling. Journal of Biomechanical Engineering, 2014, 136, .	0.6	8
58	A Total Lagrangian based method for recovering the un-deformed configuration in finite elasticity. Applied Mathematical Modelling, 2015, 39, 3913-3923.	2.2	8
59	Cellâ€based maximum entropy approximants for threeâ€dimensional domains: Application in large strain elastodynamics using the meshless total Lagrangian explicit dynamics method. International Journal for Numerical Methods in Engineering, 2020, 121, 477-491.	1.5	8
60	Subject-Specific Biomechanical Simulation of Brain Indentation Using a Meshless Method. , 2007, 10, 541-548.		8
61	Evaluation of accuracy of non-linear finite element computations for surgical simulation: study using brain phantom. Computer Methods in Biomechanics and Biomedical Engineering, 2010, 13, 783-794.	0.9	7
62	Cortical Surface Motion Estimation for Brain Shift Prediction. , 2010, , 53-62.		7
63	Objective Evaluation of Accuracy of Intra-Operative Neuroimage Registration. , 2013, , 87-99.		7
64	An explicit meshless point collocation method for electrically driven magnetohydrodynamics (MHD) flow. Applied Mathematics and Computation, 2019, 348, 215-233.	1.4	6
65	Algorithms for Computational Biomechanics of the Brain. Biological and Medical Physics Series, 2011, , 189-219.	0.3	6
66	3D Algorithm for Simulation of Soft Tissue Cutting. , 2013, , 49-62.		6
67	Coupling Finite Element and Mesh-free Methods for Modelling Brain Deformation in Response to Tumour Growth. , 2008, , .		6
68	Musculoskeletal Load Assessment of the Upper Limb Positions Subjectively Chosen as the Most Convenient. International Journal of Occupational Safety and Ergonomics, 1996, 2, 273-283.	1.1	5
69	Real-Time Nonlinear Finite Element Computations on GPU: Handling of Different Element Types. , 2011, , 73-80.		5
70	Mechanical Properties of Brainâ€“Skull Interface in Compression. , 2015, , 83-91.		5
71	Computational biomechanics for medical image analysis. , 2020, , 953-977.		5
72	Performing Brain Image Warping Using the Deformation Field Predicted by a Biomechanical Model. , 2012, , 89-96.		5

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73	Patient-Specific Meshless Model for Whole-Body Image Registration. Lecture Notes in Computer Science, 2014, , 50-57.	1.0	5
74	The Effects of Youngâ€™s Modulus on Predicting Prostate Deformation for MRI-Guided Interventions. , 2011, , 39-49.		4
75	Computation of accurate solutions when using element-free Galerkin methods for solving structural problems. Engineering Computations, 2017, 34, 902-920.	0.7	4
76	Accuracy of Non-linear FE Modelling for Surgical Simulation: Study Using Soft Tissue Phantom. , 2010, , 29-41.		4
77	Computer simulation of tumour <scp>resectionâ€induced</scp> brain deformation by a meshless approach. International Journal for Numerical Methods in Biomedical Engineering, 2022, 38, e3539.	1.0	4
78	Automatic framework for patient-specific modelling of tumour resection-induced brain shift. Computers in Biology and Medicine, 2022, 143, 105271.	3.9	4
79	Mechanical properties of the brain-skull interface. Acta of Bioengineering and Biomechanics, 2013, 15, 3-11.	0.2	4
80	On stress in abdominal aortic aneurysm: Linear versus nonâ€linear analysis and aneurysm rupture risk. International Journal for Numerical Methods in Biomedical Engineering, 2022, 38, e3554.	1.0	4
81	Strong- and Weak-Form Meshless Methods in Computational Biomechanics. , 2018, , 325-339.		3
82	Biomechanical Modelling of the Brain for Neurosurgical Simulation and Neuroimage Registration. Biological and Medical Physics Series, 2019, , 135-164.	0.3	3
83	Image, geometry and finite element mesh datasets for analysis of relationship between abdominal aortic aneurysm symptoms and stress in walls of abdominal aortic aneurysm. Data in Brief, 2020, 30, 105451.	0.5	3
84	Immersed boundary finite element method for blood flow simulation. Computers and Fluids, 2021, 230, 105162.	1.3	3
85	Maximum Principal AAA Wall Stress Is Proportional to Wall Thickness. , 2019, , 43-53.		3
86	A simple method of incorporating the effect of the Uniform Stress Hypothesis in arterial wall stress computations. Acta of Bioengineering and Biomechanics, 2018, 20, 59-67.	0.2	3
87	Total Lagrangian Explicit Dynamics-Based Simulation of Tissue Tearing. , 2011, , 63-72.		2
88	Computational Biomechanics of the Brain; Application to Neuroimage Registration. Studies in Mechanobiology, Tissue Engineering and Biomaterials, 2011, , 135-157.	0.7	2
89	Computational modelling of hydrocephalus. Journal of Biomechanics, 2013, 46, 2558-2559.	0.9	2
90	Numerical Algorithm for Simulation of Soft Tissue Swelling and Shrinking in a Total Lagrangian Explicit Dynamics Framework. , 2015, , 37-46.		2

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91	Fuzzy Tissue Classification for Non-Linear Patient-Specific Biomechanical Models for Whole-Body Image Registration. , 2016, , 85-96.		2
92	Computation of Brain Deformations Due to Violent Impact: Quantitative Analysis of the Importance of the Choice of Boundary Conditions and Brain Tissue Constitutive Model. , 2017, , 159-173.		2
93	Reconstruction of Real-World Car-to-Pedestrian Accident Using Computational Biomechanics Model: Effects of the Choice of Boundary Conditions of the Brain on Brain Injury Risk. , 2019, , 15-30.		2
94	Neuroimage as a Biomechanical Model: Toward New Computational Biomechanics of the Brain. , 2012, , 19-28.		2
95	Finite Element Algorithms for Computational Biomechanics of the Brain. Biological and Medical Physics Series, 2019, , 243-272.	0.3	2
96	Mathematical Modelling of Muscle Effect on the Kinematics of the Head-Neck Complex in a Frontal Car Collision: A Parameter Study. International Journal of Occupational Safety and Ergonomics, 1998, 4, 201-220.	1.1	1
97	On the Effects of Model Complexity in Computing Brain Deformation for Image-Guided Neurosurgery. , 2011, , 51-61.		1
98	Whole-Body Image Registration Using Patient-Specific Nonlinear Finite Element Model. , 2014, , 113-122.		1
99	Automatic Framework for Patient-Specific Biomechanical Computations of Organ Deformation. , 2021, , 3-16.		1
100	Intra-operative Update of Neuro-images: Comparison of Performance of Image Warping Using Patient-Specific Biomechanical Model and BSpline Image Registration. , 2013, , 127-141.		1
101	F04-(5) Effects of Brain-Skull Boundary Conditions on Responses of Simplified Finite Element Brain Model under Angular Acceleration in Sagittal Plane. The Reference Collection of Annual Meeting, 2003, VIII.03.1, 101-102.	0.0	1
102	Can Vascular Dynamics Cause Normal Pressure Hydrocephalus?. , 2010, , 73-80.		1
103	Meshless Algorithms for Computational Biomechanics of the Brain. Biological and Medical Physics Series, 2019, , 273-301.	0.3	1
104	Experimental Verification of the Computerized Method for Work Space Optimization in Conditions of Static Work. International Journal of Occupational Safety and Ergonomics, 1999, 5, 109-124.	1.1	0
105	Letter to the Editor: Current progress in patient-specific modeling by Neal and Kerckhoffs (2010). Briefings in Bioinformatics, 2011, 12, 545-546.	3.2	0
106	Rapid Blood Flow Computation on Digital Subtraction Angiography: Preliminary Results. , 2020, , 121-131.		0
107	Re â€œBiomechanical Assessment Predicts Aneurysm Related Events in Patients with Abdominal Aortic Aneurysmâ€• European Journal of Vascular and Endovascular Surgery, 2021, 61, 163-164.	0.8	0
108	Peak wall stress and peak wall rupture index in ruptured and asymptomatic intact abdominal aortic aneurysms. British Journal of Surgery, 2021, 108, e255-e255.	0.1	0

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109	Simulation of intracranial hemodynamics by an efficient and accurate immersed boundary scheme. International Journal for Numerical Methods in Biomedical Engineering, 2021, , e3524.	1.0	0
110	Biomechanical Modelling of the Brain for Neuronavigation in Epilepsy Surgery. Biological and Medical Physics Series, 2019, , 165-180.	0.3	0
111	Meshless Method for Simulation of Needle Insertion into Soft Tissues: Preliminary Results. , 2020, , 73-86.		0