Assad A Oberai

List of Publications by Year
in descending order

127 papers	3,858 citations	147566 31 h-index	138251 58 g-index
130 all docs	130 docs citations	130 times ranked	2350 citing authors

#	Article	IF	Citations
1	Large eddy simulation of turbulent channel flows by the variational multiscale method. Physics of Fluids, 2001, 13, 1784-1799.	1.6	384
2	The multiscale formulation of large eddy simulation: Decay of homogeneous isotropic turbulence. Physics of Fluids, 2001, 13, 505-512.	1.6	344
3	Solution of inverse problems in elasticity imaging using the adjoint method. Inverse Problems, 2003, 19, 297-313.	1.0	267
4	Computation of Trailing-Edge Noise Due to Turbulent Flow over an Airfoil. AIAA Journal, 2002, 40, 2206-2216.	1.5	158
5	Evaluation of the adjoint equation based algorithm for elasticity imaging. Physics in Medicine and Biology, 2004, 49, 2955-2974.	1.6	139
6	Linear and nonlinear elasticity imaging of soft tissue*in vivo*: demonstration of feasibility. Physics in Medicine and Biology, 2009, 54, 1191-1207.	1.6	138
7	Linear and Nonlinear Elastic Modulus Imaging: An Application to Breast Cancer Diagnosis. IEEE Transactions on Medical Imaging, 2012, 31, 1628-1637.	5.4	103
8	Solution of the nonlinear elasticity imaging inverse problem: the compressible case. Inverse Problems, 2008, 24, 045010.	1.0	102
9	Computational procedures for determining structural-acoustic response due to hydrodynamic sources. Computer Methods in Applied Mechanics and Engineering, 2000, 190, 345-361.	3.4	97
10	Solution of the nonlinear elasticity imaging inverse problem: The incompressible case. Computer Methods in Applied Mechanics and Engineering, 2011, 200, 1406-1420.	3.4	93
11	Quantitative three-dimensional elasticity imaging from quasi-static deformation: a phantom study. Physics in Medicine and Biology, 2009, 54, 757-779.	1.6	75
12	Sensitivity of the scale partition for variational multiscale large-eddy simulation of channel flow. Physics of Fluids, 2004, 16, 824-827.	1.6	72
13	Coupling between elastic strain and interstitial fluid flow: ramifications for poroelastic imaging. Physics in Medicine and Biology, 2006, 51, 6291-6313.	1.6	71
14	Detached direct numerical simulations of turbulent two-phase bubbly channel flow. International Journal of Multiphase Flow, 2011, 37, 647-659.	1.6	69
15	A multiscale finite element method for the Helmholtz equation. Computer Methods in Applied Mechanics and Engineering, 1998, 154, 281-297.	3.4	68
16	Elastic modulus imaging: some exact solutions of the compressible elastography inverse problem. Physics in Medicine and Biology, 2007, 52, 1577-1593.	1.6	67
17	Recent Results in Nonlinear Strain and Modulus Imaging. Current Medical Imaging, 2011, 7, 313-327.	0.4	62
18	A residual-based finite element method for the Helmholtz equation. International Journal for Numerical Methods in Engineering, 2000, 49, 399-419.	1.5	61

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19	Inertial Microfluidic Cell Stretcher (iMCS): Fully Automated, High‑Throughput, and Near Real‑Time Cell Mechanotyping. Small, 2017, 13, 1700705.	5.2	56
20	An application of shape optimization in the solution of inverse acoustic scattering problems. Inverse Problems, 2004, 20, 199-228.	1.0	48
21	A quantitative sub-grid air entrainment model for bubbly flows – plunging jets. Computers and Fluids, 2010, 39, 77-86.	1.3	48
22	Machine learning based predictors for COVID-19 disease severity. Scientific Reports, 2021, 11, 4673.	1.6	48
23	Computational Study on Rotor Interactional Effects for a Quadcopter in Edgewise Flight. AIAA Journal, 2019, 57, 5309-5319.	1.5	47
24	A Comprehensive Sub-Grid Air Entrainment Model for RaNS Modeling of Free-Surface Bubbly Flows. Journal of Computational Multiphase Flows, 2011, 3, 41-56.	0.8	42
25	Shape and texture-based radiomics signature on CT effectively discriminates benign from malignant renal masses. European Radiology, 2021, 31, 1011-1021.	2.3	40
26	Quantitative Compression Optical Coherence Elastography as an Inverse Elasticity Problem. IEEE Journal of Selected Topics in Quantum Electronics, 2016, 22, 277-287.	1.9	39
27	Modeling air entrainment and transport in a hydraulic jump using two-fluid RANS and DES turbulence models. Heat and Mass Transfer, 2011, 47, 911-919.	1.2	38
28	On the implementation of the Dirichlet-to-Neumann radiation condition for iterative solution of the Helmholtz equation. Applied Numerical Mathematics, 1998, 27, 443-464.	1.2	36
29	Adjoint-weighted equation for inverse problems of incompressible plane-stress elasticity. Computer Methods in Applied Mechanics and Engineering, 2009, 198, 2412-2420.	3.4	36
30	Spectral analysis of turbulence based on the DNS of a channel flow. Computers and Fluids, 2010, 39, 640-655.	1.3	35
31	Adjoint‑weighted variational formulation for the direct solution of inverse problems of general linear elasticity with full interior data. International Journal for Numerical Methods in Engineering, 2010, 81, 1713-1736.	1.5	34
32	Biomechanical imaging of cell stiffness and prestress with subcellular resolution. Biomechanics and Modeling in Mechanobiology, 2014, 13, 665-678.	1.4	33
33	Noninvasive In-Vivo Quantification of Mechanical Heterogeneity of Invasive Breast Carcinomas. PLoS ONE, 2015, 10, e0130258.	1.1	28
34	Two-fluid modeling of bubbly flows around surface ships using a phenomenological subgrid air entrainment model. Computers and Fluids, 2011, 52, 50-57.	1.3	27
35	A dynamic approach for evaluating parameters in a numerical method. International Journal for Numerical Methods in Engineering, 2005, 62, 50-71.	1.5	26
36	Acoustic eigenvalues of rectangular rooms with arbitrary wall impedances using the interval Newtonˆ•generalized bisection method. Journal of the Acoustical Society of America, 2005, 118, 3662-3671.	0.5	25

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37	Myosin IIA–mediated forces regulate multicellular integrity during vascular sprouting. Molecular Biology of the Cell, 2019, 30, 1974-1984.	0.9	24
38	Circumventing the solution of inverse problems in mechanics through deep learning: Application to elasticity imaging. Computer Methods in Applied Mechanics and Engineering, 2019, 353, 448-466.	3.4	24
39	Adjoint-weighted variational formulation for a direct computational solution of an inverse heat conduction problem. Inverse Problems, 2007, 23, 2325-2342.	1.0	23
40	Recovery of cellular traction in three-dimensional nonlinear hyperelastic matrices. Computer Methods in Applied Mechanics and Engineering, 2017, 314, 296-313.	3.4	23
41	Deep learning based classification of solid lipid-poor contrast enhancing renal masses using contrast enhanced CT. British Journal of Radiology, 2020, 93, 20200002.	1.0	23
42	Spectral analysis of the dissipation of the residual-based variational multiscale method. Computer Methods in Applied Mechanics and Engineering, 2010, 199, 810-818.	3.4	22
43	A Review of the Mathematical and Computational Foundations of Biomechanical Imaging. , 2010, , 375-408.		21
44	A NUMERICAL COMPARISON OF FINITE ELEMENT METHODS FOR THE HELMHOLTZ EQUATION. Journal of Computational Acoustics, 2000, 08, 211-221.	1.0	20
45	Three-dimensional traction microscopy with a fiber-based constitutive model. Computer Methods in Applied Mechanics and Engineering, 2019, 357, 112579.	3.4	20
46	Transversely Isotropic Elasticity Imaging of Cancellous Bone. Journal of Biomechanical Engineering, 2011, 133, 061002.	0.6	19
47	A new class of finite element variational multiscale turbulence models for incompressible magnetohydrodynamics. Journal of Computational Physics, 2015, 295, 596-616.	1.9	18
48	Solution of the time–harmonic viscoelastic inverse problem with interior data in two dimensions. International Journal for Numerical Methods in Engineering, 2012, 92, 1100-1116.	1.5	17
49	Recovering vector displacement estimates in quasistatic elastography using sparse relaxation of the momentum equation. Inverse Problems in Science and Engineering, 2017, 25, 326-362.	1.2	17
50	Uniqueness of the elastography inverse problem for incompressible nonlinear planar hyperelasticity. Inverse Problems, 2012, 28, 065008.	1.0	16
51	A Krylov subspace projection method for simultaneous solution of Helmholtz problems at multiple frequencies. Computer Methods in Applied Mechanics and Engineering, 2003, 192, 4609-4640.	3.4	15
52	Quantitative Ultrasonic Elastography for Gel Dosimetry. Ultrasound in Medicine and Biology, 2010, 36, 268-275.	0.7	15
53	A residual based eddy viscosity model for the large eddy simulation of turbulent flows. Computer Methods in Applied Mechanics and Engineering, 2014, 282, 54-70.	3.4	15
54	Stochasticity in materials structure, properties, and processing—A review. Applied Physics Reviews, 2018, 5, .	5.5	15

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55	A Radiomic-based Machine Learning Algorithm to Reliably Differentiate Benign Renal Masses from Renal Cell Carcinoma. European Urology Focus, 2022, 8, 988-994.	1.6	15
56	Predicting clinical outcomes in COVID-19 using radiomics on chest radiographs. British Journal of Radiology, 2021, 94, 20210221.	1.0	15
57	High-Frequency Ultrasound Elastography to Assess the Nonlinear Elastic Properties of the Cornea and Ciliary Body. IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, 2022, 69, 2621-2629.	1.7	15
58	Algorithms for quantitative quasi€static elasticity imaging using force data. International Journal for Numerical Methods in Biomedical Engineering, 2014, 30, 1421-1436.	1.0	14
59	Towards the mechanical characterization of abdominal wall by inverse analysis. Journal of the Mechanical Behavior of Biomedical Materials, 2017, 66, 127-137.	1.5	14
60	Output-based error estimation and mesh adaptation for variational multiscale methods. Computer Methods in Applied Mechanics and Engineering, 2017, 322, 441-459.	3.4	14
61	Recovery of Tractions Exerted by Single Cells in Three-Dimensional Nonlinear Matrices. Journal of Biomechanical Engineering, 2020, 142, .	0.6	14
62	Volumetric quantitative optical coherence elastography with an iterative inversion method. Biomedical Optics Express, 2019, 10, 384.	1.5	14
63	A Two-Way Coupled Polydispersed Two-Fluid Model for the Simulation of Air Entrainment Beneath a Plunging Liquid Jet. Journal of Fluids Engineering, Transactions of the ASME, 2012, 134, .	0.8	13
64	Uniqueness of inverse problems of isotropic incompressible three-dimensional elasticity. Journal of the Mechanics and Physics of Solids, 2014, 73, 55-68.	2.3	13
65	Direct error in constitutive equation formulation for plane stress inverse elasticity problem. Computer Methods in Applied Mechanics and Engineering, 2017, 314, 3-18.	3.4	13
66	Shape sensitivity calculations for exterior acoustics problems. Engineering Computations, 2001, 18, 376-393.	0.7	12
67	The Coupled Adjoint-State Equation in forward and inverse linear elasticity: Incompressible plane stress. Computer Methods in Applied Mechanics and Engineering, 2019, 357, 112588.	3.4	12
68	Computational Study of Diffuser Length on Ducted Rotor Performance in Edgewise Flight. AIAA Journal, 2019, 57, 796-808.	1.5	12
69	Three-dimensional traction microscopy accounting for cell-induced matrix degradation. Computer Methods in Applied Mechanics and Engineering, 2020, 364, 112935.	3.4	11
70	Benchmarking Various Radiomic Toolkit Features While Applying the Image Biomarker Standardization Initiative toward Clinical Translation of Radiomic Analysis. Journal of Digital Imaging, 2021, 34, 1156-1170.	1.6	11
71	First-order and second-order adjoint methods for parameter identification problems with an application to the elasticity imaging inverse problem. Inverse Problems in Science and Engineering, 2017, 25, 1768-1787.	1.2	10
72	A comprehensive spatial-temporal infection model. Chemical Engineering Science, 2021, 233, 116347.	1.9	10

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73	Approximate optimal projection for reduced-order models. International Journal for Numerical Methods in Engineering, 2016, 105, 63-80.	1.5	9
74	Inferring spatial variations of microstructural properties from macroscopic mechanical response. Biomechanics and Modeling in Mechanobiology, 2017, 16, 479-496.	1.4	9
75	GAN-Based Priors for Quantifying Uncertainty in Supervised Learning. SIAM-ASA Journal on Uncertainty Quantification, 2021, 9, 1314-1343.	1.1	9
76	Deep learning-based detection, classification, and localization of defects in semiconductor processes. Journal of Micro/ Nanolithography, MEMS, and MOEMS, 2020, 19, 1.	1.0	9
77	Calculation of shear stresses in the Fourier–Galerkin formulation of turbulent channel flows: projection, the Dirichlet filter and conservation. Journal of Computational Physics, 2003, 188, 281-295.	1.9	8
78	The adjoint weighted equation for steady advection in a compressible fluid. International Journal for Numerical Methods in Fluids, 2007, 54, 683-693.	0.9	8
79	Optimal numerical solution of PDEs using the variational Germano identity. Computer Methods in Applied Mechanics and Engineering, 2008, 197, 2948-2962.	3.4	8
80	Generalized Smagorinsky model in physical space. Computers and Fluids, 2008, 37, 207-217.	1.3	8
81	Adjoint-based error estimation and mesh adaptation for stabilized finite deformation elasticity. Computer Methods in Applied Mechanics and Engineering, 2018, 337, 263-280.	3.4	8
82	A dynamic multiscale viscosity method for the spectral approximation of conservation laws. Computer Methods in Applied Mechanics and Engineering, 2006, 195, 1778-1792.	3.4	7
83	A spectral turbulent cascade model for single- and two-phase uniform shear flows. Journal of Turbulence, 2008, 9, N26.	0.5	7
84	Adjoint consistency analysis of residual-based variational multiscale methods. Journal of Computational Physics, 2013, 255, 396-406.	1.9	7
85	A locally discontinuous ALE finite element formulation for compressible phase change problems. Journal of Computational Physics, 2019, 393, 438-464.	1.9	7
86	A two-parameter variational multiscale method for large eddy simulation. Physics of Fluids, 2008, 20, 085107.	1.6	6
87	Improving three-dimensional mechanical imaging of breast lesions with principal component analysis. Medical Physics, 2017, 44, 4194-4203.	1.6	6
88	Simulation of finite-strain inelastic phenomena governed by creep and plasticity. Computational Mechanics, 2018, 62, 323-345.	2.2	6
89	A continuum framework for modeling liquid-vapor interfaces out of local thermal equilibrium. International Journal of Heat and Mass Transfer, 2019, 144, 118597.	2.5	6
90	Repeatability of Linear and Nonlinear Elastic Modulus Maps From Repeat Scans in the Breast. IEEE Transactions on Medical Imaging, 2021, 40, 748-757.	5.4	6

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91	Accounting for super-spreader events and algebraic decay in SIR models. Computer Methods in Applied Mechanics and Engineering, 2022, , 115286.	3.4	6
92	Adjoint-weighted variational formulation for the direct solution of plane stress inverse elasticity problems. Journal of Physics: Conference Series, 2008, 135, 012012.	0.3	5
93	Spectral Cascade Modeling of Turbulent Flow in a Channel. Japanese Journal of Multiphase Flow, 2009, 23, 190-204.	0.1	5
94	Nonlinear elasticity imaging. , 2011, , .		5
95	Formulas for detecting a spherical stiff inclusion from interior data: a sensitivity analysis for the Helmholtz equation. Inverse Problems, 2012, 28, 084004.	1.0	5
96	A Galerkin least squares method for time harmonic Maxwell equations using NÃ©dÃ©lec elements. Journal of Computational Physics, 2013, 235, 67-81.	1.9	5
97	Divergence of finite element formulations for inverse problems treated as optimization problems. Journal of Physics: Conference Series, 2008, 135, 012088.	0.3	4
98	Lanczos iterated time-reversal. Journal of the Acoustical Society of America, 2009, 125, EL70-EL76.	0.5	4
99	Large eddy simulation models for incompressible magnetohydrodynamics derived from the variational multiscale formulation. Physics of Plasmas, 2012, 19, .	0.7	4
100	Microfluidics: Inertial Microfluidic Cell Stretcher (iMCS): Fully Automated, High-Throughput, and Near Real-Time Cell Mechanotyping (Small 28/2017). Small, 2017, 13, .	5.2	4
101	Characterization of Spatially Graded Biomechanical Scaffolds. Journal of Biomechanical Engineering, 2020, 142, .	0.6	4
102	Theory of reconstructing the spatial distribution of the filtration coefficient in vascularized soft tissues: Exact and approximate inverse solutions. Comptes Rendus - Mecanique, 2010, 338, 412-423.	2.1	3
103	A palette of fine-scale eddy viscosity and residual-based models for variational multiscale formulations of turbulence. Computational Mechanics, 2016, 57, 629-635.	2.2	3
104	A parallel interface tracking approach for evolving geometry problems. Engineering With Computers, 2022, 38, 4289-4305.	3.5	3
105	Spectral analysis of weighted Laplacians arising in data clustering. Applied and Computational Harmonic Analysis, 2022, 56, 189-249.	1.1	3
106	The Variational Multiscale Formulation of LES with Application to Turbulent Channel Flows. , 2002, , 223-239.		2
107	A Two-Way Coupled Polydispersed Simulation of Bubbly Flow Beneath a Plunging Liquid Jet. , 2010, , .		2
108	Component-based workflows for parallel thermomechanical analysis of arrayed geometries. Engineering With Computers, 2017, 33, 509-517.	3.5	2

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109	Stochastic variational multiscale analysis of the advection–diffusion equation: Advective–diffusive regime and multi-dimensional problems. Computer Methods in Applied Mechanics and Engineering, 2017, 325, 766-799.	3.4	2
110	Direct error in constitutive equation formulation for inverse heat conduction problem. International Journal for Numerical Methods in Engineering, 2018, 115, 1337-1352.	1.5	2
111	Deformation of a Panel in Repeated High Speed Flow Modeled with Creep and Multiplicatively-Decomposed Plasticity. , 2020, , .		2
112	On the applicability of continuum scale models for ultrafast nanoscale liquid-vapor phase change. International Journal of Multiphase Flow, 2021, 135, 103508.	1.6	2
113	A Stabilized B-Splines FEM Formulation for the Solution of an Inverse Elasticity Problem Arising in Medical Imaging. , 2008, , .		1
114	A computational technique to optimally design in-situ diffractive elements: applications to projection lithography at the resist resolution limit. Proceedings of SPIE, 2009, , .	0.8	1
115	Computational Analysis of Isolated and Embedded Ducted Rotors in Edgewise Flight. , 2018, , .		1
116	Solution of Inverse Problems in Biomechanical Imaging. CISM International Centre for Mechanical Sciences, Courses and Lectures, 2011, , 203-222.	0.3	1
117	Tissue Mechanics. , 2021, , 2-1-2-20.		1
118	Geometry and Adaptive Mesh Update Procedures for Ballistics Simulations. SEMA SIMAI Springer Series, 2022, , 209-231.	0.4	1
119	Optimum design of echogenic needles for ultrasound guided nerve block. , 2008, , .		0
120	Imaging of dose distributions using polymer gels based on radiation induced changes in stiffness. Journal of Physics: Conference Series, 2009, 164, 012039.	0.3	0
121	Bring the NLACE model online using XSEDE and HUBzero. , 2015, , .		0
122	Uniqueness of the interior plane strain time-harmonic viscoelastic inverse problem. Journal of the Mechanics and Physics of Solids, 2016, 92, 345-355.	2.3	0
123	An automated approach for parallel adjoint-based error estimation and mesh adaptation. Engineering With Computers, 2020, 36, 1169-1188.	3.5	0
124	Introduction to quasi-static elastography. , 2020, , 61-83.		0
125	Material parameter optimization for interior and exterior fluid–structure acoustic problems. International Journal for Numerical Methods in Engineering, 2020, 121, 5568-5589.	1.5	0
126	Residual-based stabilized formulation for the solution of inverse elliptic partial differential equations. Computers and Mathematics With Applications, 2020, 80, 822-836.	1.4	0

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127	Analytical Estimates of the Subgrid Model for Burgers Equation: Ramifications for Spectral Methods for Conservation Laws. International Journal for Multiscale Computational Engineering, 2008, 6, 299-307.	0.8	0