Harrison H Barrett

List of Publications by Year
in descending order

153 papers	5,732 citations	109321 35 h-index	91884 69 g-index
154 all docs	154 docs citations	154 times ranked	2482 citing authors

#	Article	IF	Citations
1	Addition of a channel mechanism to the ideal-observer model. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 1987, 4, 2447.	1.5	367
2	Objective assessment of image quality: effects of quantum noise and object variability. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 1990, 7, 1266.	1.5	340
3	Human- and model-observer performance in ramp-spectrum noise: effects of regularization and object variability. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 2001, 18, 473.	1.5	292
4	Objective assessment of image quality II Fisher information, Fourier crosstalk, and figures of merit for task performance. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 1995, 12, 834.	1.5	211
5	Objective assessment of image quality III ROC metrics, ideal observers, and likelihood-generating functions. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 1998, 15, 1520.	1.5	210
6	FastSPECT II: a second-generation high-resolution dynamic SPECT imager. IEEE Transactions on Nuclear Science, 2004, 51, 631-635.	2.0	200
7	List-mode likelihood. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 1997, 14, 2914.	1.5	194
8	Maximum-Likelihood Methods for Processing Signals From Gamma-Ray Detectors. IEEE Transactions on Nuclear Science, 2009, 56, 725-735.	2.0	143
9	Task-based measures of image quality and their relation to radiation dose and patient risk. Physics in Medicine and Biology, 2015, 60, R1-R75.	3.0	136
10	Validating the use of channels to estimate the ideal linear observer. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 2003, 20, 1725.	1.5	132
11	Ideal-observer computation in medical imaging with use of Markov-chain Monte Carlo techniques. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 2003, 20, 430.	1.5	108
12	SemiSPECT: A small-animal single-photon emission computed tomography (SPECT) imager based on eight cadmium zinc telluride (CZT) detector arrays. Medical Physics, 2006, 33, 465-474.	3.0	107
13	<title>Predicting human performance by a channelized Hotelling observer model</title>. , 1992, 1768, 161.		103
14	Maximum-Likelihood Estimation With a Contracting-Grid Search Algorithm. IEEE Transactions on Nuclear Science, 2010, 57, 1077-1084.	2.0	98
15	III The Radon Transform and Its Applications. Progress in Optics, 1984, 21, 217-286.	0.6	85
16	Adaptive SPECT. IEEE Transactions on Medical Imaging, 2008, 27, 775-788.	8.9	84
17	Quantitative analysis of acute myocardial infarct in rat hearts with ischemia-reperfusion using a high-resolution stationary SPECT system. Journal of Nuclear Medicine, 2002, 43, 933-9.	5.0	84
18	Compact CT/SPECT Small-Animal Imaging System. IEEE Transactions on Nuclear Science, 2004, 51, 63-67.	2.0	77

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19	Mesenchymal Stem Cell-Mediated Delivery of the Sodium Iodide Symporter Supports Radionuclide Imaging and Treatment of Breast Cancer. Stem Cells, 2011, 29, 1149-1157.	3.2	76
20	The iQID camera: An ionizing-radiation quantum imaging detector. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2014, 767, 146-152.	1.6	69
21	<title>Stabilized estimates of Hotelling-observer detection performance in patient-structured noise</title>. , 1998, , .		68
22	3D printing in X-ray and gamma-ray imaging: A novel method for fabricating high-density imaging apertures. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2011, 659, 262-268.	1.6	63
23	Reconstruction of objects from coded images by simulated annealing. Optics Letters, 1983, 8, 199.	3.3	62
24	Efficiency of the human observer detecting random signals in random backgrounds. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 2005, 22, 3.	1.5	62
25	Hotelling trace criterion as a figure of merit for the optimization of imaging systems. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 1986, 3, 717.	1.5	61
26	Calibration Method for ML Estimation of 3D Interaction Position in a Thick Gamma-Ray Detector. IEEE Transactions on Nuclear Science, 2009, 56, 189-196.	2.0	61
27	Three-dimensional reconstruction from planar projections. Journal of the Optical Society of America, 1980, 70, 755.	1.2	59
28	Ultrasonic Attenuation by Interaction with the Soft Optic Mode in KTaO3. Physical Review, 1969, 178, 743-762.	2.7	52
29	Estimation in Medical Imaging without a Gold Standard. Academic Radiology, 2002, 9, 290-297.	2.5	49
30	Channelized-ideal observer using Laguerre-Gauss channels in detection tasks involving non-Gaussian distributed lumpy backgrounds and a Gaussian signal. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 2007, 24, B136.	1.5	49
31	A prototype instrument for single pinhole small animal adaptive SPECT imaging. Medical Physics, 2008, 35, 1912-1925.	3.0	47
32	The multi-module, multi-resolution system (M3R): A novel small-animal SPECT system. Medical Physics, 2007, 34, 987-993.	3.0	45
33	Objective assessment of image quality IV Application to adaptive optics. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 2006, 23, 3080.	1.5	44
34	Objective comparison of quantitative imaging modalities without the use of a gold standard. IEEE Transactions on Medical Imaging, 2002, 21, 441-449.	8.9	43
35	Estimating random signal parameters from noisy images with nuisance parameters: linear and scanning-linear methods. Optics Express, 2008, 16, 8150.	3.4	41
36	Maximum-likelihood methods in wavefront sensing: stochastic models and likelihood functions. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 2007, 24, 391.	1.5	39

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37	Attenuated Radon and Abel transforms. Journal of the Optical Society of America, 1983, 73, 1590.	1.2	38
38	Image reconstruction from coded data: I Reconstruction algorithms and experimental results. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 1985, 2, 491.	1.5	36
39	Recent advances in BazookaSPECT: Real-time data processing and the development of a gamma-ray microscope. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2008, 591, 272-275.	1.6	35
40	Experimental determination of object statistics from noisy images. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 2003, 20, 421.	1.5	33
41	Megalopinakophobia: its symptoms and cures. , 2001, , .		32
42	Calibration of Scintillation Cameras and Pinhole SPECT Imaging Systems. , 2005, , 195-201.		31
43	A Low-Cost Approach to High-Resolution, Single-Photon Imaging Using Columnar Scintillators and Image Intensifiers. , 2006, , .		31
44	A Task-Based Approach to Adaptive and Multimodality Imaging. Proceedings of the IEEE, 2008, 96, 500-511.	21.3	30
45	Image reconstruction from coded data: II Code design. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 1985, 2, 501.	1.5	28
46	Comparing Cardiac Ejection Fraction Estimation Algorithms Without a Gold Standard. Academic Radiology, 2006, 13, 329-337.	2.5	28
47	System integration of FastSPECT III, a dedicated SPECT rodent-brain imager based on BazookaSPECT detector technology. , 2009, Oct. 24 2009-Nov. 1 2009, 4004-4008.		28
48	A Probabilistic Model for the MRMC Method, Part 1: Theoretical Development. Academic Radiology, 2006, 13, 1410-1421.	2.5	27
49	Optical processing in Radon space. Optics Letters, 1982, 7, 248.	3.3	26
50	A System Calibration and Fast Iterative Reconstruction Method for Next-Generation SPECT Imagers. IEEE Transactions on Nuclear Science, 2012, 59, 1990-1996.	2.0	26
51	<title>Correlated point processes in radiological imaging</title>. , 1997, 3032, 110.		24
52	Imaging recognition of multidrug resistance in human breast tumors using 99mTc-labeled monocationic agents and a high-resolution stationary SPECT system. Nuclear Medicine and Biology, 2004, 31, 53-65.	0.6	24
53	Objective assessment of image quality V Photon-counting detectors and list-mode data. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 2012, 29, 1003.	1.5	24
54	Figures of merit for detectors in digital radiography. I. Flat background and deterministic blurring. Medical Physics, 2004, 31, 348-358.	3.0	23

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55	Figures of merit for detectors in digital radiography. II. Finite number of secondaries and structured backgrounds. Medical Physics, 2004, 31, 359-367.	3.0	21
56	In vivo dynamic imaging of myocardial cell death using 99mTc-labeled C2A domain of synaptotagmin I in a rat model of ischemia and reperfusion. Nuclear Medicine and Biology, 2007, 34, 907-915.	0.6	21
57	Singular value decomposition for photon-processing nuclear imaging systems and applications for reconstruction and computing null functions. Physics in Medicine and Biology, 2015, 60, 7359-7385.	3.0	21
58	Direct Imaging of Radionuclide-Produced Electrons and Positrons with an Ultrathin Phosphor. Journal of Nuclear Medicine, 2008, 49, 1141-1145.	5.0	20
59	High-resolution imaging with (99m)Tc-glucarate for assessing myocardial injury in rat heart models exposed to different durations of ischemia with reperfusion. Journal of Nuclear Medicine, 2004, 45, 1251-9.	5.0	20
60	A method for approximating the density of maximum-likelihood and maximum a posteriori estimates under a Gaussian noise model. Medical Image Analysis, 1998, 2, 395-403.	11.6	19
61	Imaging recognition of inhibition of multidrug resistance in human breast cancer xenografts using 99mTc-labeled sestamibi and tetrofosmin. Nuclear Medicine and Biology, 2005, 32, 573-583.	0.6	19
62	Application of the Hotelling and ideal observers to detection and localization of exoplanets. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 2007, 24, B13.	1.5	19
63	Kinetic characterization of a novel cationic 99mTc(I)-tricarbonyl complex, 99mTc-15C5-PNP, for myocardial perfusion imaging. Journal of Nuclear Cardiology, 2010, 17, 858-867.	2.1	18
64	Progress of BazookaSPECT. Proceedings of SPIE, 2009, 7450, .	0.8	17
65	Joint reconstruction of activity and attenuation map using LM SPECT emission data. Proceedings of SPIE, 2013, 8668, .	0.8	17
66	SemiSPECT: a small-animal imaging system based on eight CdZnTe pixel detectors. , 2002, 3, 1844-1847.		16
67	Probabilistic foundations of the MRMC method. , 2005, 5749, 21.		15
68	Inverse optical design of the human eye using likelihood methods and wavefront sensing. Optics Express, 2008, 16, 304.	3.4	15
69	Direct Charged-Particle Imaging System Using an Ultra-Thin Phosphor: Physical Characterization and Dynamic Applications. IEEE Transactions on Nuclear Science, 2009, 56, 2628-2635.	2.0	15
70	Photoelectron anticorrelations and sub-Poisson statistics in scintillation detectors. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2010, 620, 359-362.	1.6	15
71	Hardware assessment using the multiâ€module, multiâ€resolution system : A signalâ€detection study. Medical Physics, 2007, 34, 3034-3044.	3.0	14
72	Maximum likelihood event estimation and list-mode image reconstruction on GPU hardware. , 2009, 2009, 4072.		13

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73	Progress in BazookaSPECT: high-resolution dynamic scintigraphy with large-area imagers. , 2012, 8508, .		13
74	Objective assessment of image quality VI: imaging in radiation therapy. Physics in Medicine and Biology, 2013, 58, 8197-8213.	3.0	12
75	Charged-particle emission tomography. Medical Physics, 2017, 44, 2478-2489.	3.0	12
76	Physiological random processes in precision cancer therapy. PLoS ONE, 2018, 13, e0199823.	2.5	12
77	Therapy operating characteristic (TOC) curves and their application to the evaluation of segmentation algorithms. Proceedings of SPIE, 2010, 7627, 76270Z.	0.8	11
78	The AdaptiSPECT imaging aperture. , 2012, 2012, 3564-3567.		11
79	Skeletal muscle satellite cell migration to injured tissue measured with111In-oxine and high-resolution SPECT imaging. Journal of Muscle Research and Cell Motility, 2013, 34, 417-427.	2.0	11
80	What does DQE say about lesion detectability in digital radiography?. , 2001, , .		10
81	Adaptive CT for high-resolution, controlled-dose, region-of-interest imaging. , 2009, 2009, 4154-4157.		10
82	Spatio-temporal Hotelling observer for signal detection from image sequences. Optics Express, 2009, 17, 10946.	3.4	10
83	Design and validation of an adaptive SPECT system: AdaptiSPECT. , 2010, 2010, 2539-2544.		10
84	Reconstruction of an object from its coded image and object constraints. Applied Optics, 1984, 23, 851.	2.1	9
85	A Probabilistic Model for the MRMC Method, Part 2: Validation and Applications. Academic Radiology, 2006, 13, 1422-1430.	2.5	9
86	Scanning linear estimation: improvements over region of interest (ROI) methods. Physics in Medicine and Biology, 2013, 58, 1283-1301.	3.0	9
87	Characteristic functionals in imaging and image-quality assessment: tutorial. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 2016, 33, 1464.	1.5	9
88	Estimation of Fano factor in inorganic scintillators. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2016, 805, 72-86.	1.6	9
89	Evaluation of hardware in a small-animal SPECT system using reconstructed images. , 2007, 6515, 1-10.		8
90	Radiance and photon noise: imaging in geometrical optics, physical optics, quantum optics, and radiology. , 2014, 9193, .		8

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91	Fisher Information Analysis of Depth-of-Interaction Estimation in Double-Sided Strip Detectors. IEEE Transactions on Nuclear Science, 2014, 61, 1243-1251.	2.0	8
92	Null functions in three-dimensional imaging of alpha and beta particles. Scientific Reports, 2017, 7, 15807.	3.3	8
93	Acoustic Properties of Materials of the Perovskite Structure. Physical Acoustics, 1970, 6, 65-108.	0.0	8
94	Dipole-sheet transform. Journal of the Optical Society of America, 1982, 72, 468.	1.2	7
95	Radon transform and bandwidth compression. Optics Letters, 1983, 8, 395.	3.3	7
96	Evaluating estimation techniques in medical imaging without a gold standard: experimental validation. , 2003, 5034, 230.		7
97	Instrumentation design for adaptive SPECT/CT. , 2008, 2008, 5585-5587.		7
98	Evaluating the protective role of ischaemic preconditioning in rat hearts using a stationary small-animal SPECT imager and 99mTc-glucarate. Nuclear Medicine Communications, 2008, 29, 120-128.	1.1	7
99	SCOUT: A fast Monte-Carlo modeling tool of scintillation camera output. , 2010, , 1203-1208.		7
100	List-mode MLEM image reconstruction from 3D ML position estimates. , 2010, 2010, 2643-2647.		7
101	Singular-value decomposition for through-focus imaging systems. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 2006, 23, 2440.	1.5	6
102	A prototype instrument for adaptive SPECT imaging. , 2007, 6510, .		6
103	Adaptive SPECT for tumor necrosis detection. , 2008, 2008, 5548-5551.		6
104	Multiple-Hit Parameter Estimation in Monolithic Detectors. IEEE Transactions on Medical Imaging, 2013, 32, 329-337.	8.9	6
105	Synthetic phase-shifting for optical testing: Point-diffraction interferometry without null optics or phase shifters. Optics Express, 2013, 21, 26398.	3.4	6
106	SCOUT: a fast Monte-Carlo modeling tool of scintillation camera output. Physics in Medicine and Biology, 2013, 58, 3581-3598.	3.0	6
107	Image science with photon-processing detectors. , 2013, 2013, .		6
108	Integration of AdaptiSPECT: a small-animal adaptive SPECT imaging system. Proceedings of SPIE, 2013, 8853, .	0.8	6

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109	High-Resolution Anamorphic SPECT Imaging. IEEE Transactions on Nuclear Science, 2014, 61, 1126-1135.	2.0	6
110	Method of calibrating response statistics for ML estimation of 3D interaction position in a thick-detector gamma camera. , 2007, 6, 4359-4363.		5
111	High-resolution, anamorphic, adaptive small-animal SPECT imaging with silicon double-sided strip detectors. , 2011, 8143, .		5
112	Comparison of the scanning linear estimator (SLE) and ROI methods for quantitative SPECT imaging. Physics in Medicine and Biology, 2015, 60, 6479-6494.	3.0	5
113	Therapy operating characteristic curves: tools for precision chemotherapy. Journal of Medical Imaging, 2016, 3, 023502.	1.5	5
114	Radiance and photon noise: imaging in geometrical optics, physical optics, quantum optics and radiology. Optical Engineering, 2016, 55, 013102.	1.0	5
115	Is there a role for image science in the brave new world of artificial intelligence?. Journal of Medical Imaging, 2019, 7, 1.	1.5	5
116	Tomographic Transformations in Optical Signal Processing. , 1987, , 335-386.		5
117	Two-Dimensional Radon-Fourier Transformer. Optical Engineering, 1985, 24, 82.	1.0	4
118	Optimizing lens-coupled digital radiographic imaging systems based on model observers' performance. , 2003, , .		4
119	Data-processing strategies for crossed-strip gamma-ray detectors. , 2008, 2008, 4091-4094.		4
120	Singular-value decomposition of a tomosynthesis system. Optics Express, 2010, 18, 20699.	3.4	4
121	A system calibration and fast iterative reconstruction method for next-generation SPECT imagers. , 2011, 2011, 3548-3553.		4
122	Maximum-likelihood estimation of parameterized wavefronts from multifocal data. Optics Express, 2012, 20, 15928.	3.4	4
123	Impact of the Fano Factor on Position and Energy Estimation in Scintillation Detectors. IEEE Transactions on Nuclear Science, 2015, 62, 42-56.	2.0	4
124	A new pet system for small-animal imaging. , 2004, 6, 3389-3392.		3
125	Singular value decomposition of pinhole SPECT systems. Proceedings of SPIE, 2009, 7263, .	0.8	3
126	The effect of gain variation in micro-channel plates on gamma-ray energy resolution. , 2013, 8853, .		3

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127	Objective assessment of the effects of tumor motion in radiation therapy. Medical Physics, 2019, 46, 3311-3323.	3.0	3
128	Objective Comparison of Quantitative Imaging Modalities Without the Use of a Gold Standard. Lecture Notes in Computer Science, 2001, , 12-23.	1.3	3
129	Molecular imaging in the College of Optical Sciences: an overview of two decades of instrumentation development. , 2014, 9186, .		3
130	Stochastic models for objects and images in oncology and virology: application to PI3K-Akt-mTOR signaling and COVID-19 disease. Journal of Medical Imaging, 2020, 8, S16001.	1.5	3
131	Analytical approximations to the Hotelling trace for digital x-ray detectors. , 2001, , .		2
132	Reply to â€œComment on â€˜Figures of merit for detectors in digital radiographyâ€™â€‰â€•[Med. Phys.31, 2364-2365 (2004)]. Medical Physics, 2004, 31, 2366-2367.	3.0	2
133	Task performance in astronomical adaptive optics. , 2006, 6272, 62721W.		2
134	A SPECT imager with synthetic collimation. Proceedings of SPIE, 2013, 8853, .	0.8	2
135	Fabrication of the pinhole aperture for AdaptiSPECT. Proceedings of SPIE, 2014, 9214, 921408.	0.8	2
136	Quantifying and reducing uncertainties in cancer therapy. , 2015, 9412, .		2
137	A prototype detector for a novel high-resolution PET system: BazookaPET. , 2012, 2012, 2123-2127.		1
138	Estimation of Fano factor in inorganic scintillators from time correlations. , 2015, , .		1
139	Computational Methods for Photon-Counting and Photon- Processing Detectors. , 2018, , .		1
140	Adaptive Hotelling discriminant functions. , 2007, 8, 65150T.1-65150T.7.		0
141	New approaches to parameter estimation from noisy image data. , 2008, , .		0
142	Bias in ROI estimators and an unbiased solution. , 2008, , .		0
143	Maximum-likelihood calibration of an x-ray computed tomography system. , 2010, 2010, 2614-2616.		0
144	Multiple-hit parameter estimation in monolithic detectors. , 2011, , 2224-2229.		0

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145	High-resolution anamorphic SPECT imaging. , 2012, , .		0
146	SmartCAM: an adaptive clinical SPECT camera. , 2013, 8853, .		0
147	Fisher information analysis of depth-of-interaction estimation in double-sided strip detectors. , 2013, , .		0
148	Comparison of the scanning linear estimator (SLE) and ROI uptake estimation for quantitative 111In-Octreotide SPECT imaging of signals embedded in random backgrounds. , 2014, , .		0
149	Use of characteristic functionals to analyze molecular images in targeted cancer therapy. , 2017, , .		0
150	Maximum-Likelihood Event Parameter Estimation from Digital Waveform Capture. , 2017, , .		0
151	System Calibration for FastSPECT III: An Ultra-High Resolution CCD-Based Pinhole SPECT System. , 2017, , .		0
152	Inverse Optical Design and Its Applications. , 2011, , .		0
153	Multimodality, multiscale imaging systems for investigating physiological random processes. , 2022, , .		0