

# Harrison H Barrett

## List of Publications by Year in descending order

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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	Multimodality, multiscale imaging systems for investigating physiological random processes. , 2022, , .		0
2	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
3	Objective assessment of the effects of tumor motion in radiation therapy. Medical Physics, 2019, 46, 3311-3323.	3.0	3
4	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
5	Computational Methods for Photon-Counting and Photon- Processing Detectors. , 2018, , .		1
6	Physiological random processes in precision cancer therapy. PLoS ONE, 2018, 13, e0199823.	2.5	12
7	Charged-particle emission tomography. Medical Physics, 2017, 44, 2478-2489.	3.0	12
8	Null functions in three-dimensional imaging of alpha and beta particles. Scientific Reports, 2017, 7, 15807.	3.3	8
9	Use of characteristic functionals to analyze molecular images in targeted cancer therapy. , 2017, , .		0
10	Maximum-Likelihood Event Parameter Estimation from Digital Waveform Capture. , 2017, , .		0
11	System Calibration for FastSPECT III: An Ultra-High Resolution CCD-Based Pinhole SPECT System. , 2017, , .		0
12	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
13	Therapy operating characteristic curves: tools for precision chemotherapy. Journal of Medical Imaging, 2016, 3, 023502.	1.5	5
14	Radiance and photon noise: imaging in geometrical optics, physical optics, quantum optics and radiology. Optical Engineering, 2016, 55, 013102.	1.0	5
15	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
16	Estimation of Fano factor in inorganic scintillators from time correlations. , 2015, , .		1
17	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
18	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

#	ARTICLE	IF	CITATIONS
19	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
20	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
21	Quantifying and reducing uncertainties in cancer therapy. , 2015, 9412, .		2
22	Fabrication of the pinhole aperture for AdaptiSPECT. Proceedings of SPIE, 2014, 9214, 921408.	0.8	2
23	Radiance and photon noise: imaging in geometrical optics, physical optics, quantum optics, and radiology. , 2014, 9193, .		8
24	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
25	High-Resolution Anamorphic SPECT Imaging. IEEE Transactions on Nuclear Science, 2014, 61, 1126-1135.	2.0	6
26	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
27	Comparison of the scanning linear estimator (SLE) and ROI uptake estimation for quantitative <sup>111</sup> In-Octreotide SPECT imaging of signals embedded in random backgrounds. , 2014, , .		0
28	Molecular imaging in the College of Optical Sciences: an overview of two decades of instrumentation development. , 2014, 9186, .		3
29	Joint reconstruction of activity and attenuation map using LM SPECT emission data. Proceedings of SPIE, 2013, 8668, .	0.8	17
30	Multiple-Hit Parameter Estimation in Monolithic Detectors. IEEE Transactions on Medical Imaging, 2013, 32, 329-337.	8.9	6
31	Skeletal muscle satellite cell migration to injured tissue measured with <sup>111</sup> In-oxine and high-resolution SPECT imaging. Journal of Muscle Research and Cell Motility, 2013, 34, 417-427.	2.0	11
32	SmartCAM: an adaptive clinical SPECT camera. , 2013, 8853, .		0
33	A SPECT imager with synthetic collimation. Proceedings of SPIE, 2013, 8853, .	0.8	2
34	Synthetic phase-shifting for optical testing: Point-diffraction interferometry without null optics or phase shifters. Optics Express, 2013, 21, 26398.	3.4	6
35	SCOUT: a fast Monte-Carlo modeling tool of scintillation camera output. Physics in Medicine and Biology, 2013, 58, 3581-3598.	3.0	6
36	Scanning linear estimation: improvements over region of interest (ROI) methods. Physics in Medicine and Biology, 2013, 58, 1283-1301.	3.0	9

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37	Objective assessment of image quality VI: imaging in radiation therapy. Physics in Medicine and Biology, 2013, 58, 8197-8213.	3.0	12
38	The effect of gain variation in micro-channel plates on gamma-ray energy resolution. , 2013, 8853, .		3
39	Fisher information analysis of depth-of-interaction estimation in double-sided strip detectors. , 2013, , .		0
40	Image science with photon-processing detectors. , 2013, 2013, .		6
41	Integration of AdaptiSPECT: a small-animal adaptive SPECT imaging system. Proceedings of SPIE, 2013, 8853, .	0.8	6
42	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
43	Maximum-likelihood estimation of parameterized wavefronts from multifocal data. Optics Express, 2012, 20, 15928.	3.4	4
44	A prototype detector for a novel high-resolution PET system: BazookaPET. , 2012, 2012, 2123-2127.		1
45	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
46	High-resolution anamorphic SPECT imaging. , 2012, , .		0
47	The AdaptiSPECT imaging aperture. , 2012, 2012, 3564-3567.		11
48	Progress in BazookaSPECT: high-resolution dynamic scintigraphy with large-area imagers. , 2012, 8508, .		13
49	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
50	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
51	A system calibration and fast iterative reconstruction method for next-generation SPECT imagers. , 2011, 2011, 3548-3553.		4
52	Multiple-hit parameter estimation in monolithic detectors. , 2011, , 2224-2229.		0
53	High-resolution, anamorphic, adaptive small-animal SPECT imaging with silicon double-sided strip detectors. , 2011, 8143, .		5
54	Inverse Optical Design and Its Applications. , 2011, , .		0

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55	Kinetic characterization of a novel cationic $^{99m}\text{Tc}(\text{I})$ -tricarbonyl complex, $^{99m}\text{Tc}$ -15C5-PNP, for myocardial perfusion imaging. <i>Journal of Nuclear Cardiology</i> , 2010, 17, 858-867.	2.1	18
56	Photoelectron anticorrelations and sub-Poisson statistics in scintillation detectors. <i>Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment</i> , 2010, 620, 359-362.	1.6	15
57	Maximum-likelihood calibration of an x-ray computed tomography system. , 2010, 2010, 2614-2616.		0
58	SCOUT: A fast Monte-Carlo modeling tool of scintillation camera output. , 2010, , 1203-1208.		7
59	Design and validation of an adaptive SPECT system: AdaptiSPECT. , 2010, 2010, 2539-2544.		10
60	List-mode MLEM image reconstruction from 3D ML position estimates. , 2010, 2010, 2643-2647.		7
61	Singular-value decomposition of a tomosynthesis system. <i>Optics Express</i> , 2010, 18, 20699.	3.4	4
62	Therapy operating characteristic (TOC) curves and their application to the evaluation of segmentation algorithms. <i>Proceedings of SPIE</i> , 2010, 7627, 76270Z.	0.8	11
63	Maximum-Likelihood Estimation With a Contracting-Grid Search Algorithm. <i>IEEE Transactions on Nuclear Science</i> , 2010, 57, 1077-1084.	2.0	98
64	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
65	Adaptive CT for high-resolution, controlled-dose, region-of-interest imaging. , 2009, 2009, 4154-4157.		10
66	Singular value decomposition of pinhole SPECT systems. <i>Proceedings of SPIE</i> , 2009, 7263, .	0.8	3
67	Progress of BazookaSPECT. <i>Proceedings of SPIE</i> , 2009, 7450, .	0.8	17
68	Maximum likelihood event estimation and list-mode image reconstruction on GPU hardware. , 2009, 2009, 4072.		13
69	Spatio-temporal Hotelling observer for signal detection from image sequences. <i>Optics Express</i> , 2009, 17, 10946.	3.4	10
70	Direct Charged-Particle Imaging System Using an Ultra-Thin Phosphor: Physical Characterization and Dynamic Applications. <i>IEEE Transactions on Nuclear Science</i> , 2009, 56, 2628-2635.	2.0	15
71	Maximum-Likelihood Methods for Processing Signals From Gamma-Ray Detectors. <i>IEEE Transactions on Nuclear Science</i> , 2009, 56, 725-735.	2.0	143
72	Calibration Method for ML Estimation of 3D Interaction Position in a Thick Gamma-Ray Detector. <i>IEEE Transactions on Nuclear Science</i> , 2009, 56, 189-196.	2.0	61

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73	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
74	Adaptive SPECT. IEEE Transactions on Medical Imaging, 2008, 27, 775-788.	8.9	84
75	Inverse optical design of the human eye using likelihood methods and wavefront sensing. Optics Express, 2008, 16, 304.	3.4	15
76	Estimating random signal parameters from noisy images with nuisance parameters: linear and scanning-linear methods. Optics Express, 2008, 16, 8150.	3.4	41
77	A Task-Based Approach to Adaptive and Multimodality Imaging. Proceedings of the IEEE, 2008, 96, 500-511.	21.3	30
78	Instrumentation design for adaptive SPECT/CT. , 2008, 2008, 5585-5587.		7
79	Data-processing strategies for crossed-strip gamma-ray detectors. , 2008, 2008, 4091-4094.		4
80	New approaches to parameter estimation from noisy image data. , 2008, , .		0
81	Direct Imaging of Radionuclide-Produced Electrons and Positrons with an Ultrathin Phosphor. Journal of Nuclear Medicine, 2008, 49, 1141-1145.	5.0	20
82	Bias in ROI estimators and an unbiased solution. , 2008, , .		0
83	Adaptive SPECT for tumor necrosis detection. , 2008, 2008, 5548-5551.		6
84	Evaluating the protective role of ischaemic preconditioning in rat hearts using a stationary small-animal SPECT imager and <sup>99m</sup> Tc-glucuronate. Nuclear Medicine Communications, 2008, 29, 120-128.	1.1	7
85	A prototype instrument for single pinhole small animal adaptive SPECT imaging. Medical Physics, 2008, 35, 1912-1925.	3.0	47
86	Adaptive Hotelling discriminant functions. , 2007, 8, 65150T.1-65150T.7.		0
87	Evaluation of hardware in a small-animal SPECT system using reconstructed images. , 2007, 6515, 1-10.		8
88	Hardware assessment using the multi- $\epsilon$ -module, multi- $\epsilon$ -resolution system : A signal- $\epsilon$ -detection study. Medical Physics, 2007, 34, 3034-3044.	3.0	14
89	The multi-module, multi-resolution system (M3R): A novel small-animal SPECT system. Medical Physics, 2007, 34, 987-993.	3.0	45
90	A prototype instrument for adaptive SPECT imaging. , 2007, 6510, .		6

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91	In vivo dynamic imaging of myocardial cell death using <sup>99m</sup> Tc-labeled C2A domain of synaptotagmin I in a rat model of ischemia and reperfusion. <i>Nuclear Medicine and Biology</i> , 2007, 34, 907-915.	0.6	21
92	Maximum-likelihood methods in wavefront sensing: stochastic models and likelihood functions. <i>Journal of the Optical Society of America A: Optics and Image Science, and Vision</i> , 2007, 24, 391.	1.5	39
93	Application of the Hotelling and ideal observers to detection and localization of exoplanets. <i>Journal of the Optical Society of America A: Optics and Image Science, and Vision</i> , 2007, 24, B13.	1.5	19
94	Channelized-ideal observer using Laguerre-Gauss channels in detection tasks involving non-Gaussian distributed lumpy backgrounds and a Gaussian signal. <i>Journal of the Optical Society of America A: Optics and Image Science, and Vision</i> , 2007, 24, B136.	1.5	49
95	Method of calibrating response statistics for ML estimation of 3D interaction position in a thick-detector gamma camera. , 2007, 6, 4359-4363.		5
96	A Low-Cost Approach to High-Resolution, Single-Photon Imaging Using Columnar Scintillators and Image Intensifiers. , 2006, , .		31
97	A Probabilistic Model for the MRMC Method, Part 1: Theoretical Development. <i>Academic Radiology</i> , 2006, 13, 1410-1421.	2.5	27
98	A Probabilistic Model for the MRMC Method, Part 2: Validation and Applications. <i>Academic Radiology</i> , 2006, 13, 1422-1430.	2.5	9
99	Comparing Cardiac Ejection Fraction Estimation Algorithms Without a Gold Standard. <i>Academic Radiology</i> , 2006, 13, 329-337.	2.5	28
100	Singular-value decomposition for through-focus imaging systems. <i>Journal of the Optical Society of America A: Optics and Image Science, and Vision</i> , 2006, 23, 2440.	1.5	6
101	Objective assessment of image quality IV Application to adaptive optics. <i>Journal of the Optical Society of America A: Optics and Image Science, and Vision</i> , 2006, 23, 3080.	1.5	44
102	Task performance in astronomical adaptive optics. , 2006, 6272, 62721W.		2
103	SemiSPECT: A small-animal single-photon emission computed tomography (SPECT) imager based on eight cadmium zinc telluride (CZT) detector arrays. <i>Medical Physics</i> , 2006, 33, 465-474.	3.0	107
104	Probabilistic foundations of the MRMC method. , 2005, 5749, 21.		15
105	Calibration of Scintillation Cameras and Pinhole SPECT Imaging Systems. , 2005, , 195-201.		31
106	Efficiency of the human observer detecting random signals in random backgrounds. <i>Journal of the Optical Society of America A: Optics and Image Science, and Vision</i> , 2005, 22, 3.	1.5	62
107	Imaging recognition of inhibition of multidrug resistance in human breast cancer xenografts using <sup>99m</sup> Tc-labeled sestamibi and tetrofosmin. <i>Nuclear Medicine and Biology</i> , 2005, 32, 573-583.	0.6	19
108	Figures of merit for detectors in digital radiography. I. Flat background and deterministic blurring. <i>Medical Physics</i> , 2004, 31, 348-358.	3.0	23

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109	Figures of merit for detectors in digital radiography. II. Finite number of secondaries and structured backgrounds. <i>Medical Physics</i> , 2004, 31, 359-367.	3.0	21
110	A new pet system for small-animal imaging. , 2004, 6, 3389-3392.		3
111	Compact CT/SPECT Small-Animal Imaging System. <i>IEEE Transactions on Nuclear Science</i> , 2004, 51, 63-67.	2.0	77
112	Reply to "Comment on "Figures of merit for detectors in digital radiography" [Med. Phys.31, 2364-2365 (2004)]. <i>Medical Physics</i> , 2004, 31, 2366-2367.	3.0	2
113	FastSPECT II: a second-generation high-resolution dynamic SPECT imager. <i>IEEE Transactions on Nuclear Science</i> , 2004, 51, 631-635.	2.0	200
114	Imaging recognition of multidrug resistance in human breast tumors using <sup>99m</sup> Tc-labeled monocationic agents and a high-resolution stationary SPECT system. <i>Nuclear Medicine and Biology</i> , 2004, 31, 53-65.	0.6	24
115	High-resolution imaging with ( <sup>99m</sup> Tc)-glucarate for assessing myocardial injury in rat heart models exposed to different durations of ischemia with reperfusion. <i>Journal of Nuclear Medicine</i> , 2004, 45, 1251-9.	5.0	20
116	Experimental determination of object statistics from noisy images. <i>Journal of the Optical Society of America A: Optics and Image Science, and Vision</i> , 2003, 20, 421.	1.5	33
117	Ideal-observer computation in medical imaging with use of Markov-chain Monte Carlo techniques. <i>Journal of the Optical Society of America A: Optics and Image Science, and Vision</i> , 2003, 20, 430.	1.5	108
118	Validating the use of channels to estimate the ideal linear observer. <i>Journal of the Optical Society of America A: Optics and Image Science, and Vision</i> , 2003, 20, 1725.	1.5	132
119	Evaluating estimation techniques in medical imaging without a gold standard: experimental validation. , 2003, 5034, 230.		7
120	Optimizing lens-coupled digital radiographic imaging systems based on model observers' performance. , 2003, , .		4
121	Objective comparison of quantitative imaging modalities without the use of a gold standard. <i>IEEE Transactions on Medical Imaging</i> , 2002, 21, 441-449.	8.9	43
122	Estimation in Medical Imaging without a Gold Standard. <i>Academic Radiology</i> , 2002, 9, 290-297.	2.5	49
123	SemiSPECT: a small-animal imaging system based on eight CdZnTe pixel detectors. , 2002, 3, 1844-1847.		16
124	Quantitative analysis of acute myocardial infarct in rat hearts with ischemia-reperfusion using a high-resolution stationary SPECT system. <i>Journal of Nuclear Medicine</i> , 2002, 43, 933-9.	5.0	84
125	Human- and model-observer performance in ramp-spectrum noise: effects of regularization and object variability. <i>Journal of the Optical Society of America A: Optics and Image Science, and Vision</i> , 2001, 18, 473.	1.5	292
126	Megalopiniakophobia: its symptoms and cures. , 2001, , .		32



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127	Analytical approximations to the Hotelling trace for digital x-ray detectors. , 2001, , .		2
128	What does DQE say about lesion detectability in digital radiography?. , 2001, , .		10
129	Objective Comparison of Quantitative Imaging Modalities Without the Use of a Gold Standard. Lecture Notes in Computer Science, 2001, , 12-23.	1.3	3
130	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
131	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
132	<title>Stabilized estimates of Hotelling-observer detection performance in patient-structured noise</title>. , 1998, , .		68
133	<title>Correlated point processes in radiological imaging</title>. , 1997, 3032, 110.		24
134	List-mode likelihood. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 1997, 14, 2914.	1.5	194
135	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
136	<title>Predicting human performance by a channelized Hotelling observer model</title>. , 1992, 1768, 161.		103
137	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
138	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
139	Tomographic Transformations in Optical Signal Processing. , 1987, , 335-386.		5
140	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
141	Two-Dimensional Radon-Fourier Transformer. Optical Engineering, 1985, 24, 82.	1.0	4
142	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
143	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
144	Reconstruction of an object from its coded image and object constraints. Applied Optics, 1984, 23, 851.	2.1	9

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145	III The Radon Transform and Its Applications. Progress in Optics, 1984, 21, 217-286.	0.6	85
146	Reconstruction of objects from coded images by simulated annealing. Optics Letters, 1983, 8, 199.	3.3	62
147	Radon transform and bandwidth compression. Optics Letters, 1983, 8, 395.	3.3	7
148	Attenuated Radon and Abel transforms. Journal of the Optical Society of America, 1983, 73, 1590.	1.2	38
149	Optical processing in Radon space. Optics Letters, 1982, 7, 248.	3.3	26
150	Dipole-sheet transform. Journal of the Optical Society of America, 1982, 72, 468.	1.2	7
151	Three-dimensional reconstruction from planar projections. Journal of the Optical Society of America, 1980, 70, 755.	1.2	59
152	Acoustic Properties of Materials of the Perovskite Structure. Physical Acoustics, 1970, 6, 65-108.	0.0	8
153	Ultrasonic Attenuation by Interaction with the Soft Optic Mode in KTaO <sub>3</sub> . Physical Review, 1969, 178, 743-762.	2.7	52