Timothy J. (Tim) Holmes, D.Sc.

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Summary

Doctor of Science in Electrical Engineering, seeking basic or applied research position (full time, regular or contracted) in signal processing, image processing, communications or systems engineering, including leadership, business development and proposal writing.

Education

B.S. in Electrical Engineering, University of Missouri, Columbia, 1976.
MS in Electrical Engineering, Illinois Institute of Technology, 1980.
D.Sc. in Electrical Engineering, Washington University, St. Louis, 1985.

Positions

'06-present	Lickenbrock Technologies, LLC, Co-Founder, CEO.
'94-'06	AutoQuant Imaging, Inc., Co-Founder; Pres., CEO ('95-'06); V.P. ('94 - '95).
'89-'06	Rensselaer Polytechnic Institute Biomed. Engineering (primary), Electrical, Comp. and Syst. Eng. (secondary) Adjunct Associate Professor (6/97 - 2006) Associate Professor, Assistant Professor (tenured; '88 - '97) Assistant Professor (1/89 - 12/92)
'85-'88	U. of Mo. - Columbia, Electr. and Comp. Eng. Dept. Assistant Professor.
'80-'85	Institute for Biom. Computing, Wash. U., St. Louis, Research Assistant (full time electronics design and systems engineering while performing doctoral studies)
'79-'80	McDonnell-Douglas Astronautics Co., St. Louis, Mo., Electronics Engineer.
'76-'79	Motorola, Communications Research Laboratory, Schaumburg, Ill.

Honors

Numerous invited Lectures, editorial board membership, book chapters, conference session chairs, conference co-organizer, National Science Foundation panels, NIH study sections.

Business Development Experience

Responsible for the start-up, growth, financial decisions, research-and-development, personnel supervision, business development, development and oversight of the sales-and-marketing and oversight of all operations of AutoQuant Imaging Inc. This business grew to revenues of ~$2.4M and sold to Roper Scientific, LLC in 2006.

Engineering Experience

Electrical Engineering: Image processing, signal processing, digital signal processing, random signals, detection and estimation, digital electronics design, analog electronics design, systems engineering, computer systems, computer architectures, software development management.
Biomedical Engineering: Biomedical imaging, 3D microscopy (algorithms and instrumentation), laser scanning ophthalmoscopy, confocal microscopy, radiological imaging (positron emission tomography, x-ray computed tomography, magnetic resonance), 3D visualization algorithms, hyperspectral imaging, optical systems integration.
Leadership: Principal Investigator, grant writing and project management on research funded by the NIH, U.S. Air Force, U.S. Army, NSF and other agencies.
Computer Languages: Proficient in Matlab, Fortran, Assembler, Machine; Exposure to (supervised projects) in C/C++, C#, Basic, CUDA

Publications *(selected from ~168 total)*

Dissertation: Data Collection and Preprocessing Considerations in Positron Emission Tomography, Washington University, St. Louis, 1985.

Patents

A. Abu-Tarif, T. Holmes, Methods, System, and Program Product for Detection and Correction of Spherical Aberration, Filed: 9/30/04, Patent US7489828, Issued: Feb. 10, 2009.

T. Holmes, Y. Zhang, Y. Yuan, FRET Imaging Using and Iterative Estimation Algorithm, US 2005/0058555 A1, Filed: 8/25/03.

Book Chapters, Papers and Conference Proceedings

R. Mackin, B. Roysam, T. Holmes, J. Turner, Automated Image Analysis Methods for Analyzing Thick and Overlapped Clusters in Cytological Preparations: Application to Pap Smears, Analytical and Quantitative Cytology and Histology, 15, 405-417, 1993.

J. Turner, D. Szarowski, J. Turner, H. Ancin, W. Lin, B. Roysam, T. Holmes, Three-Dimensional Imaging and Image Analysis of Hippocampal Neurons: Confocal and Digitally Enhanced Wide Field Microscopy, J. of Micr. Res. and Technique, 29: 269-278, 1994.

J. Browne and T.J. Holmes, Developments with Maximum Likelihood X-ray Computed Tomography: Initial Testing with Real Data, Applied Optics, Vol. 33, No. 14, May 1994.

W. Lin, J.N. Turner and T.J. Holmes, Data Corrections for 3D Stereo Widefield Light Microscope Imaging, Journal of Computer Assisted Microscopy, Vol. 6, 113-128, 1995.

J. Browne, J.M. Boone and T.J. Holmes, Developments with Maximum Likelihood X-ray Computed Tomography Finite Beamwidth Considerations Applied Optics, Vol. 34, No. 23, 10 Aug., 1995.

V. Krishnamurthi, Y. Liu, S. Bhattacharyya, J.N. Turner and T.J. Holmes, Blind Deconvolution of Fluorescence Micrographs by Maximum Likelihood Estimation, Applied Optics, Vol. 34, No. 29, 10 Oct. 1995.

J. N. Turner, H. Ancin, D.E. Becker, D.H. Szarowski, M. Holmes, N. O'Connor, M. Wang, T. Holmes and B. Roysam, Automated Image Analysis Technologies for Biological 3D Light Microscopy, Intern'l J. Imaging Systems and Tech., 8, 240-254, 1997.

J. Browne, T. Holmes, Maximum Likelihood Algorithm Techniques in X-Ray Computed Tomography, Medical Imaging Systems Techniques and Applications: Diagnosis Optimization Techniques, C.T. Leondes, Editor, Gordon and Breach, 1997.

R. Mackin, L. Newton, J. Turner, T. Holmes, B. Roysam, Accuracy of Nuclear Classification of Cervical Smear Images: Quantitative Impact of Computational Deconvolution and 3D Feature Computation, Analytical and Quantitative Cytology and Histology, 1998.

N. O'Connor, D.U. Bartsch, A.J. Mueller, W.J. Freeman, T.J. Holmes, Fluorescent Infrared Scanning Laser Ophthalmoscope for 3D Visualization: Automatic Random Eye Motion Correction and Deconvolution, Applied Optics, 37(11): 2021-33, 1998.

A.T. Cacace, J.P. Cousins, S.M. Parnes, D. Semenoff, T. Holmes, D.J. McFarland, C. Davenport, K. Stegbauer, T.J. Lovely, Cutaneous-Evoked Tinnitus. I. Phenomenology, Psychophysics and Functional Imaging, Audiol. Neurootol., 1999.

A.T. Cacace, J.P. Cousins, S.M. Parnes, D. Semenoff, T. Holmes, D.J. McFarland, C. Davenport, K. Stegbauer, T.J. Lovely, Cutaneous-Evoked Tinnitus. II. Review of Neuroanatomical, Physiological and Functional Imaging Studies, 1999.

X. He, E. Kischell, M. Rioult, T.J. Holmes, Three Dimensional Thinning Algorithm that Peels the Outmost Layer with Application to Neuron Tracing, J. Comp. Assist. Microscopy, 10(3): 123 - 135, 2000.

T.J. Holmes, N.J. O'Connor, Blind Deconvolution of 3D Transmitted Light Brightfield Micrographs, J. of Micr., 200(2):114-127, 2000.

W. He, T. Hamilton, A. Cohen, T. Holmes, J. Turner, B. Roysam, Automated Three-Dimensional Tracing of HRP Stained Neurons from a Stack of Brightfield Optical Slices, Microscopy and Microanalysis, 9: 296-310, 2003.

A. Abu-Tarif, V. Khizhnichenko, B. Northan, T. Holmes, P. Yoon, P. Brathwaite, Object Segmentation, Counting, Quantification and Tracking, Three-Dimensional and Multidimensional Microscopy: Image Processing and Acquisition, BIOS 2004, SPIE Proc. 5324, San Jose, Jan. 25 - 31, 2004.

T.J. Holmes, S.K. Pakin, B. Northan, N. Hutchings, J. Flanagan, Methodology of Retinal Thickness Measurement with the SLO, ARVO, 2005.

T. Holmes, D. Biggs, A. Abu-Tarif, Blind Deconvolution, Handbook of Biological Confocal Microscopy, 3rd Ed., J. Pawley, Editor, Springer, 2006.

T. Holmes, P.C. Cheng, Basic Principles of Imaging, Multimodality Microscopy, H. Yu et al, Editors, World Scientific, 2006.

T. Holmes, B. Northan, G. Zinser, N. Hutchings, Y. Li, D. Bartsch, J. Flanagan, Anatomically Constrained Maximum Likelihood Estimation for Estimating Retinal Thickness from Scanning Laser Ophthalmoscope Data, SPIE Proc. 6514, 2007.

G. Levi, T. Holmes, A. Invernizzi, C. Veronese, C. Rosina, E. Hermesmeyer, G. Staurenghi, Blood Flow Modification in Feeder Vessels After Intravitreal Injection of Bevacizumab (Avastin), ARVO, 2008.

T. Epplin-Zapf, E. Hermesmeyer, J. Macy, M. Pelligrini, S. Luccarelli, G. Staurenghi, T. Holmes, Image Analysis Software for Following Progression of Peripheral Neuropathy, SPIE, Bios, 2009.

T. Holmes, M. Pellegrini, C. Miller, T. Epplin-Zapf, S. Larkin, S. Luccarelli, G. Staurenghi, Automated Software Analysis of Corneal Micrographs for Peripheral Neuropathy, IOVS, 51: 4480-4491, 2010.

T. Holmes, D. Beecher, S. Larkin, J. Trobaugh, D.R. Wickham, Computed Tomography Iterative EM Algorithm Adapted for Nondestructive Evaluation, ASNT Annual Meeting, Palm Springs CA, Oct. 2011.

T. Holmes, A. Invernizzi, S. Larkin, G. Staurenghi, Dynamic Indocyanine Green Angiography Measurements, J. Biomed. Opt., 17(11), 2012.

S. Sokic, J. Larson, S. Larkin, G. Papavasiliou, T. Holmes, E. Brey, Label-Free Nondestructive Imaging of Vascular Network Structure in 3D Culture, Microvascular Research, in review, 2013.

T. Holmes, S. Larkin, J. Larson, C. Holmes, M. Vaicik, M. Turturro, A. Jurkevic, S. Sinha, T. Ezashi, G. Papavasiliou, E. Brey, Multimodal 3D Light Microscopy without Dyes, Focus on Microscopy, Maastricht The Netherlands, 24-27 March, 2013.