BIOGRAPHICAL SKETCH

NAME	POSITION TITLE
Hartov, Alexander	Research Professor
eRA COMMONS USER NAME (credential, e.g., agency login) alex_hartov	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
Northeastern University, Boston MA	BSEE	1984	Electrical Engineering
Dartmouth College, Hanover, NH	M.Sc.	1988	Biomedical Engineering
Dartmouth College, Hanover, NH	Ph.D.	1991	Biomedical Engineering

A. Personal Statement

Dr. Hartov's goal is to combine biomedical instrumentation research with student mentoring and teaching. He has been on the committees of 16 PhD students (6 as supervisor) and 20 MS students (13 as supervisor). Currently supervising 2 PhD candidates. He currently teaches a course on Digital Image Processing and organizes seminars on technology and society which are required for PhD students. Dr. Hartov began research work on image guided neurosurgery while a graduate student, when he developed a method to display a tumor outline during surgery for the "frameless stereotaxic" microscope, in 1988. Since then technology has progressed and Dr. Hartov has further contributed to the field in merging in real-time 3D ultrasound with pre-operative MRI for improved guidance and the use of stereo-vision to capture patient anatomy. Dr. Hartov's other research interests include Electrical Impedance Imaging, particularly for breast cancer screening and prostate cancer screening.

B. Positions

2010/06-present	Director of the MS and PhD program, Thayer School of Engineering, Dartmouth
2008-present	Research Professor of Engineering, Thayer School of Engineering, Dartmouth
2002-2008	Research Associate Professor of Engineering, Thayer School of Engineering
2001-2005	Director R & D (Co-Owner) Hanover Medical Imaging Project LLC
1996-10/02	Research Assistant Professor of Engineering, Thayer School of Engineering
	Research Assistant Professor, Dept. of Surgery, Dartmouth Medical School
	Member Research Staff, Norris Cotton Cancer Center, Lebanon, NH
1995-1996	Project Director, Biomedical Engineering, Daat Research Corp., Lebanon NH
1995	Research Assistant Professor, Dartmouth Medical School
	Research Assistant Professor of Engineering, Thayer School of Engineering, Dartmouth
1993 -1995	Research Associate, DMS. Intraoperative hyperthermia and radiation therapy
1993	Self employed researcher. Small Business Innovative Research (SBIR)
1991-1992	Research Associate, Dartmouth Medical School (DMS)
1986-1991	Graduate Student
1980-1986	Electronics engineer LTX Corp., Westwood, MA

Other Professional activities

2010-12 Member Review Panel – External Evaluation – Ecole Polytechnique de Montreal

2006-Present Board Member and Secretary, Good Neighbor Health Clinic, White River Junction, free clinic.

Consulting, medical instrumentation, electronics, image processing and imaging software.

Review panels NIH

- NIH/NCRR Special Emphasis Panel, Technology Development for Biomedical Applications
- NIH/CSR Medical Imaging Technologies Review Panel
- NIH SBIR/STTR review panel
- NIH/NCI Special Review Panel, Innovative Technologies for Molecular Analysis of Cancer

Conferences organization:

- SPIE Organizing Committee, Reviewer Poster session 2005 conference.

SPIE Organizing Committee, Image Guided Surgery Track, 2006 conference.
2008 Chair and organizer EIT Conference, Dartmouth College, Hanover, USA

C. Selected peer-reviewed publications

1. Lunn KE, Paulsen KD, Liu F, Kennedy FE, Hartov A, Roberts DW (2006). "Data-guided brain deformation modeling: Evaluation of a 3-D adjoint inversion method in porcine studies." *IEEE Transactions on Biomedical Engineering* 53(10):1893. [PMID: 17019852]
2. Halter RJ, Hartov A, Heaney J, Schned A, Paulsen KD (2007). "Electrical Impedance of the Human Prostate." *IEEE Transactions on Biomedical Engineering* 54(7):1321. [PMID: 17605363]
3. Poplack SP, Paulsen KD, Hartov A, Meaney PM, Pogue B, Tosteson T, Grove M, Soho S, Wells W (2007). "Electromagnetic breast imaging: pilot results in women with abnormal mammography." *Radiology* 243(2):350. [PMID: 17400760]
4. Halter RJ, Hartov A, Paulsen KD (2008). "A broadband high frequency electrical impedance tomography system for breast imaging." *IEEE Transactions on Biomedical Engineering* 55(2):650. [PMID: 18270001]
5. Hartov A, Roberts DW, Paulsen KD (2008). "A comparative analysis of coregistered ultrasound and magnetic resonance imaging in neurosurgery." *Neurosurgery*, 63(3):91-99 Suppl. S. [PMID: 18424971]
6. Borsic A., R. Halter, Y. Wan, A. Hartov, K.D. Paulsen, "Electrical Impedance Tomography Reconstruction for Three Dimensional Imaging of the Prostate," *Phys Meas.,* 31(8):S1-S16 Sp. Iss., 2010. PMCID: PMC20647619.
7. Hartov A., K.D. Paulsen, S. Ji, K. Fontaine, M. Furon, A. Borsic, D.W. Roberts, "Adaptive Spatial Calibration of a 3D Ultrasound System," *Medical Physics*, 37(5):2121-2130, 2010. PMCID: PMC2871034.
8. Roberts D.W., P.A. Valdés, B.T. Harris, K.M. Fontaine, A. Hartov, X. Fan, S. Ji, S.S. Lollis, B.W. Pogue, B.C. Wilson, K.D. Paulsen, "Coregistered fluorescence-enhanced tumor resection of malignant glioma: relationships between δ-aminolevulinic acid–induced protoporphyrin IX fluorescence, magnetic resonance imaging enhancement, and neuropathological parameters: Clinical article," *J Neurosurgery*, 114(3):595-603, 2011. PMCID: PMC2921008.
9. Wan Y., R.J. Halter, A. Borsic, P. Manwaring, A. Hartov, K.D. Paulsen, "Sensitivity Study of an Ultrasound Coupled Transrectal Electrical Impedance Tomography System for Prostate Imaging," *Phys. Meas*. 31(8):S17-29, 2010. PMCID: PMC20647618.
10. Ji S., D.W. Roberts, A. Hartov, K.D. Paulsen, "Real-time Interpolation for True 3-Dimensional Ultrasound Image Volumes," *J Ultrasound Med*, 30(2):243–252, 2011.
11. Valdes P.A., F. Leblond, A. Kim, B.T. Harris, B.C. Wilson, X. Fan, T.D. Tosteson, A. Hartov, S. Ji, K. Erkmen, N.E. Simmons, K.D. Paulsen, D.W. Roberts. "Quantitative fluorescence in intracranial tumor: implications for ALA-induced PpIX as an intraoperative biomarker," *J Neurosurg,* 115(1):11-7, 2011. PMCID: PMC3129387.
12. Forsyth J., A. Borsic, R.J. Halter, A. Hartov, K.D. Paulsen, "Optical breast shape capture and finite element mesh generation for electrical impedance tomography," *Physiol Meas*, 32(7):797-809, 2011.
13. Leblond F., S.C. Davis, Z. Ovanesyan, P.A. Valdés, A. Kim, B.C. Wilson, A. Hartov, B.W. Pogue, K.D. Paulsen, D.W. Roberts, "Analytic expression of fluorescence-ratio correlates with depth in multi-spectral sub-surface imaging," *Phys Med Biol*, 56(21):6823-37, 2011.
14. Ji S., Roberts D.W., Hartov A., Paulsen K.D., "Intraoperative patient registration using volumetric true 3D ultrasound without fiducials", Medical Physics. 39(12), 7540–7552, (2012)
15. Roberts DW, Valdés PA, Harris BT, Hartov A, Fan X, Ji S, Pogue BW, Leblond F, Tosteson TD, Wilson BC, Paulsen KD. *Adjuncts for Maximizing Resection: 5-ALA*. (Clin Neurosurg. 2012;59:75-8). PMID: 22960516

D. Research Support.
Research Support
Current

1 R01 NS052274-01A2 Roberts (PI) 09/01/2007 – 08/31/2013
NIH/NCI
Co-Registered Fluorescence-Enhanced Resection of Malignant Glioma
This project is develo0ping co-registered fluorescence resection techniques and procedures for resection of malignant glioma.

R01CA159324 (Paulsen) 04/04/2011 – 03/31/2016
NIH/NCI
Preoperative Image Updating for Guidance During Brain Tumor Resection
This academic-industrial partnership will develop and evaluate a system for updating preoperative images in the operating room during brain tumor resection.

Completed
5R01CA124925-02 Hartov (PI) 07/24/2007 - 05/31/2011
NIH/NCI
Prostate Cancer Screening with Electrical Impedance Measurements
This project proposes to design, build and test an imaging device which will combine conventional intracavitary ultrasound with electrical impedance tomography. The device is intended to improve diagnostic for prostate cancer and to aid in treatment decisions by differentiating between different types of prostate cancers.

5 P01 CA080139-08 Paulsen (PI) 05/01/2006 - 04/30/2012
NIH/NCI
Alternative Breast Cancer Imaging Modalities; Project 2 (Hartov)
This is the competing continuation application for a program which is aimed at developing and evaluating four alternative breast imaging modalities.

1 R21 CA133877-01A1 Demidenko (PI) 07/01/2008 - 06/30/2011
NIH
Breast Cancer Detection Using Electrical Impedance Measurements
The goal of this project is to develop a computer-aided system to detect abnormality in breasts, cancer particularly, using electrical impedance tomography (EIT) measurements. The present project aims to develop alternative and inexpensive screening tools to assist diagnosis for situations where mammography is inconclusive.

RC1EB011000-01 Halter (PI) 09/30/09 – 08/31/12
NIH/NIBIB
Electrical Property Based Image-guided Prostate Biopsy
Develop and translate an image-guided prostate biopsy procedure to the clinic based on bioelectrical property mapping.
Role: PI
W81XWH-09-1-0458 Halter (PI) 06/15/09 – 06/14/12

Pending:
NIH (R21 proposal)
Radiation BioDosimetry with Impedance Measurements
This project proposes to investigate the short term (24h-1wk) effect of radiation on tissues and particularly whether these can be quantified ex post facto using impedance measurements. This idea is proposed as a possible field dosimetry tool for screening victims of a nuclear accident.