David Pierson Bradway, Ph.D.

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Research Scientist
Biomedical Engineering
Duke University
Durham, NC 27708 USA

Objective

- Career in research, visualization, data acquisition, and signal processing
- Engineering, research and development role in academia or industry

Work Experience

- **Duke University** (Durham, NC, USA)

  Research Scientist, 2014 - present

- **Technical University of Denmark (DTU)** (Kongens Lyngby, Denmark)

  Postdoctoral Researcher, 2013 - 2014

  - Developed OpenCL software for processing 3-D Doppler ultrasound data on the GPU
  - Presented results in conference abstract, poster, and proceedings
  - Completed pre-clinical feasibility study of cardiac vector flow imaging and preparing peer-reviewed article

- **Duke University** (Durham, NC, USA)

  Graduate Research and Teaching Assistant, 2005 - 2013

  - PhD project using ultrasound to noninvasively measure the heart's mechanical properties
  - Organized and conducted out pre-clinical trials at Duke University Medical Center
  - Presented results in conferences, proceedings and co-authored articles

- **Siemens Healthcare** (Issaquah, WA, USA)

  Graduate Student Research Intern, 2008

  - Worked within a research team in a multinational corporation
  - Added multiple focal zone ARFI excitation to research mode of Acuson S2000 ultrasound scanner
  - Learned version control and IDE tools

Education

- **Duke University** (Durham, NC, USA)

  Ph.D. in Biomedical Engineering, May 2013.

- **The Ohio State University (OSU)** (Columbus, OH, USA)

  B.S. in Electrical and Computer Engineering, June 2005.

Teaching

- Ultrasound module of Medical Physics 731 (2015, 2016)
- Guest lecturer for Biomedical Engineering 590 (2016)
- Instructor at "International Summer School on Advanced Ultrasound Imaging", Technical University of Denmark (June 2015)

Invention Disclosures and Patents

- Duke IDF #4547: "Low-Cost, Portable Ultrasound Shear Wave Device for Characterization of Material Viscoelasticity"
- Duke IDF #540: "Visual Feedback for Improved Triggered Acquisitions for Ultrasound Imaging"

Honors and Activities

- Whitaker International Program Scholar (2013)
- Student Travel Support IEEE International Ultrasonics Symposium, Dresden, Germany (2012)
- National Science Foundation Graduate Research Fellow (2005-2008)
- Goldwater Research Scholar (2004-2005)
- Organized engineering design and build trip to Honduran orphanage (2004)
- Founded engineering community service group at Ohio State (2003)

Professional Activities

- Early Career Professional Development in Medical Imaging Workshop, SPIE Medical Imaging 2015
- Associate Editor, Ultrasonic Imaging journal (2016-)
- Reviewer for Ultrasound in Medicine and Biology, Ultrasonic Imaging jounal

Submitted proposals

- "Sensor-enabled Ultrasound Probes for Volumetric Image Acquisition and Interpretation: Proof of Concept in Pediatric Appendicitis". Duke – Wallace H. Coulter Translational Research Grants Program
- "Portable Ultrasound Device for Staging Liver Fibrosis". Duke – Wallace H. Coulter Translational Research Grants Program

Skills

- Advanced signal and imaging processing programming: Matlab and Python
- Working knowlegde of many tools and languages: Git, C/C++, OpenCL/CUDA, MS Office, and Markdown
- Focused on problem solving, signal and image analysis, scientific computing, and experimental design
- Strong written and verbal communication, and data visualization display skills
- Successful writer of fellowships and scholarships
- Personal projects in mobile and embedded systems: Arduino, Raspberry Pi

Journal Articles

[1–12]

Abstracts and Proceedings

[13–35]

Publications

1. Fahey BJ, Nelson RC, Bradway DP, Hsu SJ, Dumont DM, et al. (2008) In vivo visualization of abdominal malignancies with acoustic radiation force elastography. Physics in medicine and biology 53: 279–93. doi:10.1088/0031-9155/53/1/020

2. Fahey BJ, Nelson RC, Hsu SJ, Bradway DP, Dumont DM, et al. (2008) In vivo guidance and assessment of liver radio-frequency ablation with acoustic radiation force elastography. Ultrasound in medicine & biology 34: 1590–603. doi:10.1016/j.ultrasmedbio.2008.03.006

3. Nightingale K, Palmeri M, Zhai L, Frinkley K, Wang M, et al. (KR) Impulsive acoustic radiation force: imaging approaches and clinical applications. The Journal of the Acoustical Society of America 123: 3792. Available: http://scitation.aip.org/content/asa/journal/jasa/123/5/10.1121/1.2935460.

4. NIGHTINGALE K, PALMERI M, DAHL J, BRADWAY D, HSU S, et al. (2009) Elasticity imaging with acoustic radiation force: Methods and clinical applications. Japanese journal of medical ultrasonics 36: 116.

5. Wolf PD, Eyerly SA, Bradway DP, Dumont DM, Bahnson TD, et al. (2011) Near real time evaluation of cardiac radiofrequency ablation lesions with intracardiac echocardiography based acoustic radiation force impulse imaging. The Journal of the Acoustical Society of America 129: 2438. Available: http://scitation.aip.org/content/asa/journal/jasa/129/4/10.1121/1.3587978.

6. Eyerly SA, Bahnson TD, Koontz JI, Bradway DP, Dumont DM, et al. (2012) Intracardiac acoustic radiation force impulse imaging: A novel imaging method for intraprocedural evaluation of radiofrequency ablation lesions. Heart rhythm: the official journal of the Heart Rhythm Society 9: 1855–1862. doi:10.1016/j.hrthm.2012.07.003

7. Hollender P, Bradway D, Wolf P, Goswami R, Trahey G (2013) Intracardiac acoustic radiation force impulse (ARFI) and shear wave imaging in pigs with focal infarctions. IEEE transactions on ultrasonics, ferroelectrics, and frequency control 60: 1669–1682. Available: http://ieeexplore.ieee.org/lpdocs/epic03/wrapper.htm?arnumber=6573445.

8. Hollender P, Bradway D, Wolf P, Goswami R, Trahey G (2013) Intracardiac acoustic radiation force impulse (aRFI) and shear wave imaging in pigs with focal infarctions. IEEE transactions on ultrasonics, ferroelectrics, and frequency control 60: 1669–1682. doi:10.1109/TUFFC.2013.2749

9. Patel V, Dahl JJ, Bradway DP, Doherty JR, Lee SY, et al. (2014) Acoustic Radiation Force Impulse Imaging (ARFI) on an IVUS Circular Array. Ultrasonic Imaging 36: 98–111. doi:10.1177/0161734613511595

10. Eyerly SA, Bahnson TD, Koontz JI, Bradway DP, Dumont DM, et al. (2014) Contrast in Intracardiac Acoustic Radiation Force Impulse Images of Radiofrequency Ablation Lesions. Ultrasonic Imaging 36: 133–148. doi:10.1177/0161734613519602

11. Jensen JA, Rasmussen MF, Pihl MJ, Holbek S, Villagómez HCA, et al. (2016) Safety assessment of advanced imaging sequences i: Measurements. IEEE transactions on ultrasonics, ferroelectrics, and frequency control 63: 110–119. doi:10.1109/TUFFC.2015.2502987

12. Bottenus N, Long W, Zhang H, Jakovljevic M, Bradway D, et al. (2016) Feasibility of swept synthetic aperture ultrasound imaging. doi:10.1109/TMI.2016.2524992

13. Hsu SJ, Bradway DP, Fahey BJ, Trahey GE (2007) Transthoracic Acoustic Radiation Force Impulse Imaging of the Cardiac Cycle. In: Ultrasonic measurement and imaging of tissue elasticity.

14. Bradway DP, Hsu SJ, Fahey BJ, Dahl JJ, Nichols TC, et al. (2007) 6B-6 Transthoracic Cardiac Acoustic Radiation Force Impulse Imaging: A Feasibility Study. Ieee. pp. 448–451. Available: http://ieeexplore.ieee.org/lpdocs/epic03/wrapper.htm?arnumber=4409694.

15. Fahey BJ, Nelson RC, Hsu SJ, Bradway DP, Dumont DM, et al. (2007) 6B-4 In Vivo Acoustic Radiation Force Impulse Imaging of Abdominal Lesions. In: 2007 iEEE ultrasonics symposium proceedings. Ieee. pp. 440–443. Available: http://ieeexplore.ieee.org/lpdocs/epic03/wrapper.htm?arnumber=4409692.

16. Bradway DP, Fahey BJ, Nelson RC, Trahey GE (2009) ARFI imaging of abdominal ablation and liver lesion biopsy. In: International symposium on ultrasonic imaging and tissue characterization, 2009. Available: http://uitc-symposium.org/2009_abstracts.pdf.

17. Husarik D, Nelson RC, Bradway DP, Fahey BJ, Nightingale KR, et al. (2009) First Clinical Experience with Sonographic Elastography of the Liver Using Acoustic Radiation Force Impulse (ARFI) Imaging. In: RSNA. Available: http://rsna2009.rsna.org/search.

18. Nelson RC, Bradway DP, Fahey BJ, Trahey GE (2009) Future Application of Ultrasound: Acoustic Radiation Force Impulse (ARFI) Imaging. In: AIUM. Available: http://www.aium.org/loginRequired/membersOnly/proceedings/2009.pdf.

19. Bradway DP, Fahey BJ, Nelson RC, Trahey GE (2009) Recent Clinical Results of Acoustic Radiation Force Impulse Imaging of Abdominal Ablation. In: International tissue elasticity conference. Available: http://www.elasticityconference.org/prior_conf/2009/PDF/2009Proceedings.pdf.

20. Hsu SJ, Bradway DP, Bouchard RR, Hollender PJ, Wolf PD, et al. (2010) Parametric pressure-volume analysis and acoustic radiation force impulse imaging of left ventricular function. In: 2010 iEEE international ultrasonics symposium. Ieee. pp. 698–701. doi:10.1109/ULTSYM.2010.5935661

21. Hollender PJ, Bouchard RR, Hsu SJ, Bradway DP, Wolf PD, et al. (2010) Intracardiac measurements of elasticity using Acoustic Radiation Force Impulse (ARFI) methods: Temporal and spatial stability of shear wave velocimetry. In: 2010 iEEE international ultrasonics symposium. IEEE. pp. 698–701. doi:10.1109/ULTSYM.2010.5935946

22. Bradway DP, Hsu SJ, Wolf PD, Trahey GE (2010) Acoustic Radiation Force Impulse Imaging of Acute Myocardial Ischemia and Infarct. In: International symposium on ultrasonic imaging and tissue characterization. Available: http://uitc-symposium.org/2010_abstracts.pdf.

23. Bradway DP, Hsu SJ, Wolf PD, Trahey GE (2010) Transthoracic Acoustic Radiation Force Impulse Imaging of Cardiac Function. In: International tissue elasticity conference. Available: http://www.elasticityconference.org/prior_conf/2010/PDF/2010Proceedings.pdf.

24. Bradway DP, Rosenzweig SR, Doherty JR, Hyun D, Trahey GE (2011) Recent Results and Advances in Transthoracic Cardiac Acoustic Radiation Force Impulse Imaging. In: International symposium on ultrasonic imaging and tissue characterization. Available: http://www.elasticityconference.org/prior_conf/2011/PDF/2011ITECProceedings.pdf.

25. Byram BC, Gianantonio DM, Bradway DP, Hyun D, Jakovljevic M, et al. (2011) Direct in vivo Myocardial Infarct Visualization Using 3D Ultrasound and Passive Strain Contrast. In: International tissue elasticity conference. Available: http://www.elasticityconference.org/prior_conf/2011/PDF/2011ITECProceedings.pdf.

26. Byram BC, Bradway DP, Jakovljevic M, Gianantonio D, Hyun D, et al. (2011) Direct In Vivo Myocardial Infarct Visualization Using 3D Ultrasound and Passive Strain Contrast. In: IEEE ultrasonics symp. doi:10.1109/ULTSYM.2011.0007

27. Bradway DP, Hollender PJ, Goswami R, Wolf PD, Trahey GE (2012) Feasibility and safety of transthoracic cardiac acoustic radiation force impulse imaging methods. In: 2012 iEEE international ultrasonics symposium. IEEE. pp. 2027–2030. doi:10.1109/ULTSYM.2012.0507

28. Bradway DP, Hollender PJ, Goswami R, Wolf PD, Trahey GE (2012) Transthoracic Cardiac Acoustic Radiation Force Impulse Imaging: in vivo Feasibility, Methods, and Initial Results. In: International symposium on ultrasonic imaging and tissue characterization, 2012. Available: http://uitc-symposium.org/2012_abstracts.pdf.

29. Hollender PJ, Bradway DP, Goswami R, Wolf PD, Trahey GE (2012) Acoustic radiation force techniques for imaging cardiac infarct in vivo: methods and initial results. In: International symposium on ultrasonic imaging and tissue characterization. Available: http://uitc-symposium.org/2012_abstracts.pdf.

30. Eyerly SA, Bahnson T, Koontz J, Bradway DP, Dumont D, et al. (2012) Confirmation of Cardiac Radiofrequency Ablation Treatment Using Intra-Procedure Acoustic Radiation Force Impulse Imaging. In: IEEE ultrasonics symposium. doi:10.1109/ULTSYM.2012.0509

31. Hollender PJ, Bradway DP, Wolf PD, Goswami R, Trahey GE (2012) Intracardiac ARF-driven Shear Wave Velocimetry to Estimate Regional Myocardial Stiffness and Contractility in Pigs with Focal Infarctions. In: IEEE ultrasonics symposium. doi:10.1109/ULTSYM.2012.0508

32. Goswami R, Bradway D, Kisslo J, Trahey G (2013) Novel Application of Acoustic Radiation Force Impulse Imaging in Transthoracic Echocardiography. In: Journal of the american college of cardiology. American College of Cardiology Foundation, Vol. 61. p. E1090. doi:10.1016/S0735-1097(13)61090-6

33. Patel V, Dahl JJ, Bradway DP, Doherty JR, Smith SW (2013) Acoustic radiation force impulse imaging on an IVUS circular array. In: 2013 iEEE international ultrasonics symposium (iUS). IEEE. pp. 773–776. doi:10.1109/ULTSYM.2013.0199

34. Bradway DP, Pihl MJ, Krebs A, Tomov BG, Kjær CS, et al. (2014) Real-time GPU implementation of transverse oscillation vector velocity flow imaging. In: SPIE medical imaging.Vol. 9040. pp. 90401Y–90401Y–6. doi:10.1117/12.2043582

35. Bradway DP, Hansen KL, Nielsen MB, Jensen JA (2015) Transverse oscillation vector flow imaging for transthoracic echocardiography. In: SPIE medical imaging. pp. 941902–941902–7. doi:10.1117/12.2081145