

Curriculum Vitae

Dr. M. Berke Gur

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Education

PhD, Mechanical Engineering: Underwater Acoustic Signal Processing Feb. 2009
University of Massachusetts at Lowell, *with high honors*

MS, Mechanical Engineering: Dynamics and Control Dec. 2003
University of Southern California, *with honors*

MBA, Business Administration: Finance Mar. 2006
Bogazici University

BS, Mechanical Engineering: Jun. 1999
Middle East Technical University, *with honors*

Honors and Awards

- Recipient of the 2008-2009 Dean's Gold Medal for highest GPA, Univ. of Massachusetts Lowell
- Co-recipient of the 2007-2008 Graduate Scholar Research Award, Univ. of Massachusetts Lowell (Provost Fellowship, worth \$33,075)
- Winner of Acoustic Society of America Technical Committee on Signal Processing Student Challenge 2007 (award \$1,000)
- Outstanding Graduate Student of the Year 2006-2007, Dept. of Mechanical Engineering, Univ. of Massachusetts Lowell
- 2006-2007 Graduate Research Grant Award, Graduate Student Association (worth \$1,600)
- Finalist in the SEM International Student Paper Competition (2007)
- Faculty of Engineering, Dean's High Honor List (1 semester) and Dean's Honor List (2 semesters), Middle East Technical University

Funded Research Projects

1. Time Reversal Based Photoacoustic Medical Imaging
Funding Source: The Scientific and Technological Research Council of Turkey (TUBITAK) 3501 National Young Researchers Career Development Program
Project ID: 113E186
Role: PI
Duration: Oct. 2013-Oct. 2016
Budget: 130,000 USD
2. High Resolution and Robust Time Reversal Acoustics using Vector Sensor Arrays (VecTR4)
Funding Source: European Commission FP7 Marie Curie Reintegration Grants (FP7-PEOPLE-2009-RG)
Project ID: PIRG06-GA-2009-256585
Role: PI
Duration: Aug. 2010- Aug. 2014
Budget: 100,000 Euro
3. 4D Modeling of the Human Heart and Hemodynamic Mapping
Funding Source: Republic of Turkey, Ministry of Industry and Commerce
Project ID: 00706.STZ.2010-2
Role: Researcher
Duration: Dec. 2010- Dec. 2012
Budget: 151,000 USD
4. Optimization of Ventriculoarterial Coupling System Efficiency with a Mechanical Assist Device
Funding Source: The Scientific & Technological Research Council of Turkey (TUBITAK)
Project ID: 111M243
Role: Researcher
Duration: Oct. 2011- Oct. 2013
Budget: 121,500 USD

Publications

Dissertation

1. **B. Gur** (2008). "Adaptive Enhancement of Marine Mammal Vocalizations," PhD Dissertation, Univ. of Massachusetts Lowell, Proquest ISBN 978-0549983064, 277 pp.

Peer Reviewed Journal Publications

2. **B. Gur** (2014). "Particle velocity gradient based acoustic mode beamforming for short linear vector sensor arrays," J. Acoust. Soc. Am. 135(6), 3463-3473.
<http://dx.doi.org/10.1121/1.4876180>
3. **B. Gur**, C. Niezrecki (2011). "A wavelet packet adaptive filtering algorithm for enhancing manatee vocalizations," J. Acoust. Soc. Am. 129(4), 2059-2067.
<http://dx.doi.org/10.1121/1.3557031>

4. **B. Gur**, C. Niezrecki (2009). "A source separation approach to enhancing marine mammal vocalizations," J. Acoust. Soc. Am. 126(6), 3062-3070.
<http://dx.doi.org/10.1121/1.3257549>
5. **B. Gur**, C. Niezrecki (2007). "Autocorrelation based denoising of manatee vocalizations using the undecimated discrete wavelet transform," J. Acoust. Soc. Am. 122(1), 188-199.
<http://dx.doi.org/10.1121/1.2735111>

International Conference Proceedings

6. **B. Gur** (2012). "Gradient based processing for linear vector sensor arrays," Proc. 11th European Conf. Underwater Acoustics (ECUA), POMA 17(1), 070084, Edinburgh, Scotland.
7. **B. Gur**, H.-E. de Bree, T. Akal (2010). "A comparative analysis of triplet and vector sensor arrays," Proc. 10th European Conf. Underwater Acoustics (ECUA), Vol. II, pp. 927-930, Istanbul, Turkey.
8. H.-E. de Bree, **B. Gur**, T. Akal (2009). "Hydroflown MEMS-based underwater acoustical particle velocity sensor-The sensor, its calibration and some possible localization techniques," Proc. 3rd Inter. Conf. Underwater Acoustic Measurements, Nafplion, Greece.
9. **B. Gur**, C. Niezrecki, P. Avitabile (2008). "Improvements in modal parameter extraction through post-processing frequency response function estimates," Proc. IMAC XXVI (on CD-ROM), Orlando, FL.
10. **B. Gur**, C. Niezrecki (2007). "Nonlinear median transform domain denoising of frequency response functions," Proc. 36th InterNoise Conf., Istanbul, Turkey.
11. **B. Gur**, C. Niezrecki (2007). "Detection of coherent bioacoustic signals in underwater noise," Proc. 2nd Inter. Conf. Underwater Acoustic Measurements, Heraklion, Greece.
12. **B. Gur** (2007). "Wavelet domain estimation of frequency response functions," Proc. 10th SEM Annual Conf., Springfield, MA.
13. R. Shaw, **B. Gur**, P. Avitabile, J. Sherwood (2006). "Baseball bat model identification and detection of system changes through in situ experimental modal models developed on the field," Proc. IMAC XXIV, pp. 58-65.

National Conference Proceedings

14. **B. Gur** (2014). "Vector sensor array based higher order acoustic sensors," Proc. 22st SIU Conf., pp. 1814-1817, Trabzon, Turkey (in Turkish).
<http://dx.doi.org/10.1109/SIU.2014.6830604>
15. **B. Gur** (2013). "Vektor sensor dizinleri icin akustik mod huzme olusturucu," Proc. 10th National Acoustics Congress, pp. 349-358, Istanbul, Turkey (in Turkish).
16. **B. Gur** (2013). "Particle velocity gradient based acoustic mode beamforming for linear vector sensor arrays," Proc. 21st SIU Conf., pp. 1-4, Girne, North Cyprus (in Turkish).
<http://dx.doi.org/10.1109/SIU.2013.6531424>
17. **B. Gur**, T. Akal, H.-E. de Bree (2011). Hydroflown: MEMS sualti akustik vektor algilayicisi," Proc. 9th National Acoustics Congress, pp. 260-265, Ankara, Turkey (in Turkish).

Invited Talks, Conference Presentations, Abstracts and other Publications

18. **B. Gur.** “Acoustic intensity: Definition, measurements & applications,” Bahcesehir University Sound Technologies Graduate Seminar (Mar. 2014, invited talk).
19. **B. Gur.** “Particle velocity acoustics: Theory, measurement and application to towed arrays,” Koc University Graduate Seminar (Dec. 2011, invited talk).
20. **B. Gur, C. Niezrecki.** “Shallow water acoustic propagation in West Indian manatee habitats,” J. Acoust. Soc. Am. 128(4), p. 2466(A) (Oct. 2010, invited presentation). <http://dx.doi.org/10.1121/1.3508835>
21. **B. Gur, C. Niezrecki.** “Multi-channel detection of weak narrowband signals in the presence of Gaussian and impulsive noise,” J. Acoust. Soc. Am. 121(5), p. 3203(A) (Jun. 2007). <http://dx.doi.org/10.1121/1.4782483>
22. **C. Niezrecki, B. Gur, J. Cramer, D. O. Beusse.** “Simulation of detection ranges for acoustic-based manatee detection,” J. Acoust. Soc. Am. 119(5), p. 3405(A) (Jun. 2006). <http://dx.doi.org/10.1121/1.4786764>
23. **B. Gur, C. Niezrecki.** “Wavelet-based denoising of manatee vocalizations,” J. Acoust. Soc. Am. 119(5), p. 3404(A) (Jun. 2006). <http://dx.doi.org/10.1121/1.4786760>
24. **B. Gur, C. Niezrecki.** “Wavelet-based detection of manatee vocalizations,” J. Acoust. Soc. Am. 117(4), p. 2492(A) (May 2005). <http://dx.doi.org/10.1121/1.4787888>

Research Interests

- Acoustics and Vibrations
- Signal Processing
- Control Theory and Its Applications

Appointments and Academic Experience

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| ○ <u>Assistant Professor, Bahcesehir University</u>
Department of Mechatronics Engineering | Istanbul/TURKEY
09/2009-present |
| ○ <u>Visiting Assistant Professor, Stanford University</u>
Computer Science Department, Artificial Intelligence Lab | California/USA
08/2014-02/2015 |
| ○ <u>Lecturer, Bahcesehir University</u>
Department of Mechatronics Engineering | Istanbul/TURKEY
02/2009-09/2009 |
| ○ <u>Research Assistant, Univ. of Massachusetts-Lowell</u>
Department of Mechanical Engineering | Massachusetts/USA
09/2004-12/2008 |

Dissertation research is focused on non-linear, adaptive algorithms for enhancing and extracting bioacoustic signals from noisy observations. Other research areas are experimental modal analysis and blind signal processing for biomedical imaging applications.

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| ○ <u>Research Assistant, Univ. of Florida</u>
Department of Mechanical Engineering | Florida/USA
05/2004-08/2004 |
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Conducted research on efficient time-frequency representation of bioacoustic signals using the wavelet transform.

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| ○ Graduate Grading Assistant, Univ. of Southern California | California/USA |
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Department of Aerospace and Mechanical Engineering

01/2003-04/2004

Investigated the design of controllers based on Gauss' principle of constrained motion. Assisted faculty in teaching and administrative duties of core and advanced undergraduate mechanics courses including Statics (AME 201), Mechanics II (AME 205), and Stress Analysis (AME 403).

Teaching Experience

Bahcesehir University

- MCH2008 Engineering Mechanics (S12)
- MCH2011 Statics and Strength of Materials (F12, F13)
- MCH2012 Engineering Dynamics (S13, S14)
- MCH3007 Machine Design (F13)
- MCH3008 Control Systems (F12)
- MCH4001 Fundamentals of Robotics (S09, F09, F10, F11)
- MCH4005 Measurement and Instrumentation (S13)
- MCH4208 Mechanical Vibrations (F09)
- MCH4224 Computer Control of Mechanical Systems (S10, F10)
- MCH4997 Capstone Project I (Su12)
- EEE3304 Feedback Control Systems (S09, S10, S11, S12)
- MCH5208 Mechanical Vibrations (F11)
- MCH5615 Noise, Vibration and Harshness (F12)

University of Massachusetts-Lowell

- ME 518 Data Acquisition and Signal Processing (guest lecturer)
- ME 524 Fundamentals of Acoustics (guest lecturer)

University of Southern California

- Graduate assistant for AME 201 Statics, AME 205 Mechanics II, AME 403 Stress Analysis courses

Professional Affiliations

- Acoustical Society of America (ASA, member)
- Institute of Electrical and Electronics Engineering (IEEE, member)
- American Society of Mechanical Engineering (ASME, member)
- Turkish Acoustic Society (TAKDER, member)
- Turkish Chamber of Mechanical Engineers (TMMOB-MMO, member)