Curriculum Vitae
Dr. M. Berke Gur

Office:	Department of Mechatronics Engineering Bahcesehir University Ciragan Cad. No: 4-6, D-416 Besiktas / Istanbul 34349 TURKEY
Phone:	+90 (212) 381-0556 (work)
Email:	berke.gur@eng.bau.edu.tr
Web:	`http://berkegur.com/`

Education

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

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

MBA, Business Administration: Finance — Mar. 2006
Bogazici University, *with honors*

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

- Robotic Squid for Underwater Manipulation and Intervention
  Funding Source: The Scientific and Technological Research Council of Turkey (TUBITAK) - 1003 Primary Subjects R&D Funding Program
  Project ID: 116M629 (Main Project: 116M629)
  Role: Principle Investigator (PI) and Consortium Leader (CL)
  Duration: Jan. 2019-Jan. 2022
  Project Budget: 385 656 USD (1 990 487 TL; Consortium Budget: 596 107 USD (3 076 690 TL))

- Development of Autonomous Transport Vehicles and Human-Machine/Machine-Machine Interfaces for Smart Factories
  Funding Source: The Scientific and Technological Research Council of Turkey (TUBITAK) - 1003 Primary Subjects R&D Funding Program
  Project ID: 116E853 (Main Project: 116E731)
  Role: Researcher (PI: Dr. Yongki Yoon, Bahcesehir University; CL: Dr. Ahmet Yazici, Eskisehir Osmangazi University)
  Duration: Oct. 2017-Apr. 2020
  Project Budget: 143 482 USD (495 187 TL; Consortium Budget: 705 942 USD (2 436 347 TL))

- Submarine Self Noise Prediction, Monitoring/Warning System Prototype Development
  Funding Source: ITUNOVA TTO
  Project ID: N/A
  Role: Researcher
  Duration: 2016-2018
  Budget: 931 500 Euro (3 771 734 TL)

- Design and Development of a Robotic Forceps with Force Feedback Capability for Minimal Invasive Surgery
  Funding Source: The Scientific and Technological Research Council of Turkey (TUBITAK) - 1003 Primary Subjects R&D Funding Program
  Project ID: 115E712
  Role: Researcher (PI: Dr. Ugur Tumerdem, Marmara University)
  Duration: Apr. 2016-Sep. 2018
  Budget: 232 900 USD (494 578 TL)

- 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 (273 119 TL)

- High Resolution and Robust Time Reversal Acoustics using Vector Sensor Arrays (VecTRA)
  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 (194 200 TL)

- Whole Body Control of Underactuated Underwater Robots
  Funding Source: The Scientific and Technological Research Council of Turkey (TUBITAK) - 2229

International Postdoctoral Research Fellowship Programme
Project ID: 1059B191400721
Role: PI
Duration: Aug. 2014-Feb. 2015
Budget: 17 000 USD

- 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
- 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 97-8054-998-3064, 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

B. Gur. "Modal Beamforming Methods for Circular Acoustic Vector Sensor Arrays," (in preparation).

A. Alassi, **B. Gur**. "Redundancy Resolution Methods for 7-DOF Anthropomorphic Manipulator for Surgical Applications," (in preparation).

International Conference Proceedings

6. N. Yilmaz, M. Bazman, A. Alassi, **B. Gur**, U. Tumerdem (2019). "6-axis hybrid sensing and estimation of tip forces/torques on a hyper-redundant robotic surgical instrument," Proc. IEEE/RSJ Int. Conf. Intelligent Robots and Systems (IROS), pp. 2990-2997, Macau, China. http://dx.doi.org/10.1109/IROS40897.2019.8967835

7. Y. Yoon, **B. Gur** (2018). "Parameter estimation and control of non-holonomic mobile robots: A model-based approach," Proc. 6th Int. Conf. on Control Engineering and Information Technology (CEIT), Istanbul, Turkey.

8. A. Alassi, N. Yilmaz, M. Bazman, **B. Gur**, U. Tumerdem (2018). "Development and kinematic analysis of a redundant, modular and backdrivable laparoscopic surgery robot," Proc. IEEE/ASME Int. Conf. Advanced Intelligent Mechatronics (AIM), pp. 213-219, Auckland, New Zealand. http://dx.doi.org/10.1109/AIM.2018.8452712

9. **B. Gur** (2017)."Modal beamforming for small circular arrays of particle velocity sensors," Proc. 25th European Signal Processing Conf. (EUSIPCO), pp. 304-309, Kos, Greece. http://dx.doi.org/10.23919/EUSIPCO.2017.8081235

10. **B. Gur** (2017). "A modal beamforer for circular arrays of 1-dimensional particle velocity sensors," Proc. 173rd ASA Mtg., Boston, USA. https://doi.org/10.1121/2.0000820

11. **B. Gur** (2012). "Gradient based processing for linear vector sensor arrays," Proc. 11th European Conf. Underwater Acoustics (ECUA), POMA 17(1), 070084, Edinburgh, Scotland. http://dx.doi.org/10.1121/1.4792224

12. **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.

13. H.-E. de Bree, **B. Gur**, T. Akal (2009). "The Hydroflown: MEMS-based underwater acoustical particle velocity sensor-The sensor, its calibration and some possible localization techniques," Proc. 3rd Inter. Conf. Underwater Acoustic Measurements, pp. 35-42, Nafplion, Greece.

14. **B. Gur**, C. Niezrecki, P. Avitabile (2008). "Improvements in modal parameter extraction through post-processing frequency response function estimates," Proc. IMAC XXVI (ISBN: 978-1-60560-066-6), Vol. II, Sec. 22A, pp. 1131-1141, Orlando, FL.

15. **B. Gur**, C. Niezrecki (2007). "Nonlinear median transform domain denoising of frequency response functions," Proc. 36th InterNoise Conf. (INTER-NOISE 2007, ISBN: 978-1-60560385-8), Vol. VII, pp. 4547-4555, Istanbul, Turkey.

16. **B. Gur**, C. Niezrecki (2007). "Detection of coherent bioacoustic signals in underwater noise," Proc. 2nd Inter. Conf. Underwater Acoustic Measurements, Heraklion, Greece.

17. **B. Gur** (2007). Wavelet domain estimation of frequency response functions," Proc. 10th SEM Annual Conf., Springfield, MA.

18. 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 (ISBN: 978-1-60423502-9) , Vol. II, Sec. 11, pp. 525-532.

National Conference Proceedings

19. **B. Gur** (2017). "Kucuk boyutlu vektor algilayicili dizinler: Deneyler ve dogrulama," Proc. 12th National Acoustics Congress, pp. 85-94, Urla-Izmir, Turkey (in Turkish).

20. **B. Gur** (2017). "Modal beamforming for circular acoustic vector sensor arrays," Proc. 25th SIU Conf., pp. 1-4, Antalya, Turkey (in Turkish).
http://dx.doi.org/10.1109/SIU.2017.7960315

21. S. Kormaz, **B. Gur** (2016). "Eksik tahrikli seri eklemli bir robotun izdusum yontemi ile konum kontrolu," Proc. 3rd TORK Conf., pp. 81-84, Istanbul, Turkey (in Turkish).

22. **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

23. **B. Gur** (2013). "Vektor sensor dizinleri icin akustik mod huzme olusturucu," Proc. 10th National Acoustics Congress, pp. 349-358, Istanbul, Turkey (in Turkish).

24. **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

25. **B. Gur**, T. Akal, H.-E. de Bree (2011). "Hydroflown: MEMS sualtı akustik vektör algılayıcısı," Proc. 9th National Acoustics Congress, pp. 260-265, Ankara, Turkey (in Turkish).

Invited Talks

26. **B. Gur** "Acoustic Intensity: Definition, Measurements and Applications," Bahcesehir University, Sound Technologies Program (Mar. 2014).

27. **B. Gur** "Particle Velocity Acoustics: Theory, Measurement and Application to Towed Arrays," Koc University, Mechanical Engineering Dept. (Dec. 2011).

28. **B. Gur**, C. Niezrecki. "Shallow water acoustic propagation in West Indian manatee habitats," J. Acoust. Soc. Am. 128(4), p. 2466(A) (Oct. 2010).
http://dx.doi.org/10.1121/1.3508835

29. **B. Gur** "Unsupervised daptive Processing and Enhancement of Marine Mammal Vocalizations," Univ. of Massachusetts Lowell, Dept. of Computer Science, May 2008.

Conference Presentations, Abstracts and other Publications

30. **B. Gur** and 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

31. C. Niezrecki, **B. Gur**, J. Cramer, and 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

32. **B. Gur** and 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

33. **B. Gur** and 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

Advised Theses

1. A. Alassi (2018). "Kinematics, Dynamics, and Integration of a Redundant Manipulator for Laparoscopic Robotic Surgery," Bahcesehir University, Graduate School of Natural and Applied Sciences, MS Thesis, 80 pages (Sep. 2017)

2. M. Dini (2017). "The Control of Robot Manipulators at Singular Configurations," Bahcesehir University, Graduate School of Natural and Applied Sciences, MS Thesis, 75 pages (May 2017)

3. S. Korkmaz (2016). "Motion and Force Control of Underactuated Robot Manipulators Based on Projected Inverse Dynamics," Bahcesehir University, Graduate School of Natural and Applied Sciences, MS Thesis, 68 pages (Apr. 2016)

4. C. Nuhut (2016). "Analysis Modelling and Design of Parametric Arrays (Kişisel Ses Uygulamarı için Parametrik Dizilerin İncelemesi, Modellemesi ve Dizaynı), (in Turkish) Bahcesehir University, Graduate School of Natural and Applied Sciences, MS Thesis, 51 pages (Jul. 2016)

5. A. Golpaygani (2015). "Development of the Structural Model for a Thin Walled Open Profile Rectangular Cantilever Beam with Longitudinally Embedded Piezoelectric, Bahcesehir University, Graduate School of Natural and Applied Sciences, MS Thesis, 74 pages (Jun. 2015)

Research Interests

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

Appointments and Academic Experience

- Department Chair, Mechatronics Engineering, Bahcesehir University — Istanbul / TURKEY, 01/2019-Present
- Associate Professor, Bahcesehir University — Istanbul / TURKEY, 03/2019-Present
- Assistant Professor, Bahcesehir University — Istanbul / TURKEY, 10/2009-03/2019
- Lecturer, Bahcesehir University — Istanbul / TURKEY, 02/2009-10/2009

o Research Assistant, Univ. of Massachusetts-Lowell — 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.

o Research Assistant, Univ. of Florida — Florida / USA

05/2004-08/2004

Conducted research on efficient time-frequency representation of bioacoustic signals using the wavelet transform.

o Graduate Grading Assistant, Univ. of Southern California — California / USA

05/2004-06/2007

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

- Undergraduate (evaluation scores are out of 10.0)
  - o Engineering Mechanics (S'12: 8.72)
  - o Statics and Strength of Materials (F'12: 8.00, F'13, F'15: 8.00, F'16: 7.80, F'17: 8.20, F'18)
  - o Engineering Dynamics (S'13, S'14, S'16: 7.20, S'17: 7.25, S'18, S'19)
  - o Machine Design (F'13)
  - o Fundamentals of Robotics (S'09: 9.38, F'09: 9.44, F'10: 8.96, F'11: 8.50, F'15: 7.90, F'16, F'17)
  - o Measurement and Instrumentation (S'13: 8.66)
  - o Mechanical Vibrations (F'09: 9.54)
  - o Computer Control of Mechanical Systems (S'10: 9.60, F'10: 8.80)
  - o Control Systems (S'09: 8.28, S'10: 8.62, S'11: 8.70, S'12: 8.16, F'12)
  - o Capstone Project (Su'12, F'17)
- Graduate (evaluation scores are out of 10.0)
  - o Advanced Robotics (S'15, S'16: 7.67, S'17: 7.75, S'18, S'19)
  - o Mechanical Vibrations (F'11: 9.36)
  - o Noise, Vibration and Harshness (F'12: 8.00)

University of Massachusetts Lowell

- Graduate
  - o Data Acquisition and Signal Processing (guest lecturer)
  - o Fundamentals of Acoustics (guest lecturer)

University of Southern California

- Undergraduate
    - Statics (graduate assistant)
    - Mechanics II (graduate assistant)
    - Stress Analysis (graduate assistant)

Professional Affiliations

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

Skills

- Programming: MATLAB, NI LabView, ROS, C/C++, Python, COMSOL MultiPhysics, SolidWorks, dSpace ControlDesk
- DAQ & DSP Board: dSpace ds1103, NI PXI Series, Spectral Dynamics SigLab
- Vibration Hardware: Polytec PSV-400-3D Scanning Vibrometer
- Publication Software: LaTeX
- Language: English (fluent), German (basic), Turkish (native)