

CURRICULUM VITAE

Dr. Barış Atakan

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RESEARCH INTERESTS

Bio-inspired communication and networking techniques for wireless networks, wireless sensor networks, wireless sensor and actor networks, delay tolerant networks, cognitive radio networks. Nanonetworks, specifically body-area nanonetworks for nanomedicine applications, mobile ad hoc nanonetworks and graphene-based nanonetworks, specifically molecular communications and nanoscale electromagnetic communications,

TEACHING INTERESTS

Communication systems, signals and systems, digital signal processing, computer networks, wireless networks, probability theory, information theory.

EDUCATIONAL BACKGROUND

- (2006-2011) **Koç University, İstanbul, Turkey**
Ph.D. in Electrical & Electronics Engineering December 2011
Thesis: Bio-inspired Communication Theories and
Techniques for Next-Generation Networks
Advisor: *Dr. Ozgur B. Akan*
- (2002-2005) **Middle East Technical University, Ankara, Turkey**
M.Sc. in Electrical & Electronics Engineering December 2005
Thesis: 3-D Grasping During Serpentine Motion with a Snake-Like Robot
Advisor: *Dr. Ismet Erkmen*
- (1995-2000) **Ankara University, Ankara, Turkey**
B.S. in Electronics Engineering June 2000

PROFESSIONAL EXPERIENCE

- (2012-) **Associate Professor**, Depart. of Elec. and Electronics Eng.,
İzmir Institute of Technology, İzmir, Turkey
- (2011-2012) **Postdoctoral Research Fellow**, Broadband Wireless Networking Laboratory,
School of Electrical & Computer Engineering, Georgia Institute of Technology, Atlanta, GA, USA
- Investigation of fundamentals of molecular communications in nanonetworks
- (2010-2011) **Graduate Research and Teaching Assistant**, Next-generation & Wireless Communications Laboratory,
Department of Electrical & Electronics Engineering, Koç University, İstanbul, Turkey
- Teaching information theory and signal processing
 - Investigation and development of frontier nanoscale communication paradigms for nanonetworks
 - Development of bio-inspired communication algorithms for wireless networks
- (2006-2010) **Graduate Research Assistant**, Next-generation & Wireless Communications Laboratory,
Department of Elec. & Electronics Engineering, Middle East Technical University, Ankara, Turkey
- Investigation and development of frontier nanoscale communication paradigms for nanonetworks
 - Development of bio-inspired communication algorithms for wireless networks

PUBLICATIONS

Book

- 1) B. Atakan, “*Molecular Communications and Nanonetworks: From Nature To Practical Systems*,” **Springer, New York**, 2014.

Journal Papers

- 1) S. Galmés, B. Atakan, “*Performance Analysis of Diffusion-Based Molecular Communications with Memory*,” **IEEE Transactions on Communications**, vol. 64, no. 9, Sept. 2016.
- 2) B. Atakan, “*Optimal transmission probability in binary molecular communication*,” **IEEE Communications Letters**, vol. 17, no. 6, pp. 1152-1155, June 2013.
- 3) B. Atakan, “*On Exploiting Sampling Jitter in Vehicular Sensor Networks*,” **IEEE Transactions on Vehicular Technology**, vol. 63, no. 1, pp. 403-407, Jan. 2014.
- 4) B. Atakan and O. B. Akan, “*Biological foraging-inspired communication in intermittently connected mobile cognitive radio ad hoc networks*,” **IEEE Transactions on Vehicular Technology**, vol. 61, no. 6, pp. 2651-2658, July 2012.
- 5) B. Atakan, S. Galmés, and O. B. Akan, “*Nanoscale Communication with Molecular Arrays in Nanonetworks*,” **IEEE Transactions on Nanobiosciences**, vol. 11, no. 2, pp. 149-160, June 2012.
- 6) B. Atakan and O. B. Akan, “*Bio-inspired Cross-layer Communication in Wireless Sensor and Actuator Networks*,” **IEEE Transactions on Vehicular Technology**, vol. 61, no. 5, pp. 2185-2193, June 2012.
- 7) A. Guney, B. Atakan and O. B. Akan, “*Mobile Ad Hoc Nanonetworks with Collision-based Molecular Communication*,” **IEEE Transactions on Mobile Computing**, vol. 11, no. 3, pp. 353-366, March 2012.
- 8) B. Atakan, S. Balasubramaniam, and O. B. Akan, “*Body Area NanoNetworks with Molecular Communications in Nanomedicine*,” **IEEE Communications Magazine**, vol. 50, no. 1, pp. 28-34, January 2012.
- 9) B. Atakan, and O. B. Akan, “*Carbon Nanotube-based Nanoscale Ad Hoc Networks*,” **IEEE Communications Magazine**, vol. 48, no. 6, pp. 129-135, June 2010.
- 10) B. Atakan, and O. B. Akan, “*Distributed Audio Sensing with Homeostasis-inspired Autonomous Communication*,” **Ad Hoc Networks Journal (Elsevier)**, vol. 9, no. 4, pp. 552-564, June 2011.
- 11) E. Gul, B. Atakan, and O. B. Akan, “*NanoNS: A Nanoscale Network Simulator Framework for Molecular Communications*,” **Nano Communication Networks (Elsevier)**, vol. 1, no. 2, pp. 138-156, June 2010.
- 12) B. Atakan, and O. B. Akan, “*Deterministic Capacity of Information Flow in Molecular Nanonetworks*,” **Nano Communication Networks (Elsevier)**, vol. 1, no. 1, pp. 31-42, March 2010.

- 13) B. Atakan, and O. B. Akan, “*On Channel Capacity and Error Compensation in Molecular Communication*,” **Springer Transaction on Computational System Biology**, vol. 10, pp. 59-80, December 2008.

Book Chapters

- 1) B. Atakan, O. B. Akan, “*Immune System Based Energy Efficient and Reliable Communication in Wireless Sensor Networks*,” **Advances in Biologically Inspired Information Systems**, Edited by F. Dressler and I. Carreras, Springer, 2007.
- 2) B. Atakan, T. Tugcu, O. B. Akan, “*Bio-inspired Communications in Wireless Sensor Networks*,” **Handbook of Wireless Sensor and Ad Hoc Networks**, Edited by S. Misra, I. Woungang, and S. C. Misra, Springer (London), 2008.
- 3) B. Atakan, O. B. Akan, “*Biologically-inspired Dynamic Spectrum Access in Cognitive Radio Networks*,” **Bio-inspired Computing and Communication Networks**, Edited by Y. Xiao and F. Hu, , Auerbach Publications, CRC Press, 2008.

Conference Papers

- 1) B. Atakan, B. Gulbahar, O. B. Akan, “*Immune System-inspired Evolutionary Opportunistic Spectrum Access in Cognitive Radio Ad Hoc Networks*,” in **Proceedings of IFIP/IEEE MED-HOC-NET 2010**, pp. 1-8, Juan-les-pins, France, June 2010.
- 2) B. Atakan, O. B. Akan, “*Single and Multiple-Access Channel Capacity in Molecular Nanonetworks*,” in **Proceedings of ICST/ACM Nano-Net 2009**, Luzern, Switzerland, October 2009.
- 3) B. Atakan, O. B. Akan, “*Carbon Nanotube Sensor Networks*,” in **Proceedings of IEEE Nanocom 2009**, San Francisco, USA, August 2009.
- 4) B. Atakan, O. B. Akan, “*On Molecular Multiple-Access, Broadcast, and Relay Channels in Nanonetworks*,” in **Proceedings of ICST/ACM BIONETICS 2008**, Hyogo, Japan, November 2008.
- 5) B. Atakan, O. B. Akan, “*An Information Theoretical Approach for Molecular Communication*,” in **Proceedings of IEEE/ACM BIONETICS 2007**, Budapest, Hungary, December, 2007.
- 6) B. Atakan, A. Bereketli, and O. B. Akan, “*Homeostasis Based Communication in Wireless Multimedia Sensor Networks*,” in **Workshop on advances in Wireless Networking (WOW-NET)**, IFIP Networking 2007, Atlanta, USA, May 2007.
- 7) B. Atakan, O. B. Akan, “*On Event Signal Reconstruction in Wireless Sensor Networks*,” in **Proceedings of IFIP/TC6 NETWORKING 2007**, Atlanta, GA, May 2007.
- 8) B. Atakan, O. B. Akan, “*Immune System Based Distributed Node and Rate Selection in Wireless Sensor Networks*,” in **Proceedings of IEEE/ICST BIONETICS 2006**, Cavalese, Italy, December 2006.
- 9) B. Atakan, A. M. Erkmen, I. Erkmen, “*3-D Grasping During Serpentine Motion with a Snake-like Robot*,” in **Proceedings of IASTED International Conference ROBOTICS AND APPLICATIONS 2005**, Cambridge USA.

MEMBERSHIPS

- Student Member, Institute of Electrical and Electronics Engineers (IEEE)

TECHNICAL ACTIVITIES

- Technical Program Committee member for the The Second IEEE International Workshop on Molecular and Nanoscale Communications (IEEE MoNaCom'12).
- Technical Program Committee member for the The Seventeenth IEEE Symposium on Computers and Communications (IEEE ISCC'12).
- Technical Program Committee member for the The First IEEE WoWMoM Workshop on the Internet of Things, IoT-SoS 2012.
- Reviewer for IEEE Journal on Selected Areas in Communications, IEEE Transactions on Signal Processing, IEEE Transactions on Vehicular Technology, IEEE Communication Letters, Computer Networks Journal (Elsevier Science), Ad Hoc Networks Journal (Elsevier Science), International Journal of Communication Systems, European Transactions on Telecommunications, Simulation Modelling Practice and Theory (Elsevier Science), many IEEE, ACM, and ICST conferences.

REFERENCES

Available upon request.