



Tolga Girici

TOBB

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Department of Electrical and Electronics Engineering,
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RESEARCH INTERESTS

Wireless Communications: Power and Rate Control, Multiple Access, Resource Allocation, Optimal Placement, Queueing Analysis, Routing, Energy-Efficient Communications, Cross-Layer Design.

Communication Technologies: 5G, OFDMA, LTE, IEEE 802.16/20 , Sensor and Ad Hoc Networks, Drone-Based Communications, Satellite Communications, Tactical Networks, Smart Grid.

Techniques: Convex and Integer Programming, Stochastic Control, Dynamic Programming, Stochastic Learning, Particle Swarm Optimization, Queueing Theory, Extreme Value Theory.

EDUCATION

PhD Electrical Engineering

2000 - 2007

University of Maryland, College Park

“RESOURCE ALLOCATION SCHEMES FOR OFDMA BASED WIRELESS SYSTEMS WITH QUALITY OF SERVICE CONSTRAINTS”

Thesis advisor: Prof. Anthony Ephremides

BS Electrical and Electronics Engineering

1996-2000

Middle East Technical University, Ankara, Turkey

Emphasis: Communications and VLSI Design

Minor in Business Administration

1998-2000

Middle East Technical University, Ankara, Turkey

Emphasis: Corporate Finance

High School

1993-1996

İzmir High School of Science, Bornova, İzmir, Turkey

Emphasis: Math and Science

PROFESSIONAL EXPERIENCE

Associate Professor

2012-

TOBB Economics and Technology University, Department of Electrical and Electronics Engineering, Ankara, Turkey

Assistant Professor

2017-
2012

TOBB Economics and Technology University, Department of Electrical and Electronics Engineering, Ankara, Turkey

Research Assistant and Intern <i>Fujitsu Labs, College Park, Maryland USA</i>	2006-2007
Intern <i>Intelligent Automation Inc., Rockville, Maryland USA</i>	2005-2005
Research Assistant <i>University of Maryland at College Park, Maryland USA</i>	2009-2004
Part-time Researcher <i>TUBİTAK - Bilten, Ankara, Turkey</i>	1999-2000

PEER-REVIEWED JOURNAL PAPERS [statistics]

1. T. Girici, "Joint Power, Subcarrier and Subframe Allocation in Multihop Relay Networks", International Journal of Communication Systems, Volume 22, Issue 7, Pages 835- 855, 2009.
2. T. Girici, "Asymptotic throughput analysis of multicast transmission schemes", AEU Journal of Electronics and Communications, Volume 63, Issue 10, Pages 901-905, October 2009.
3. T. Girici, C. Zhu, J.R. Agre, A. Ephremides, "Proportional Fair Scheduling Algorithm in OFDMA-based Wireless Systems with QoS Constraints", Journal of Communications and Networks, Volume 12, Issue 1, Pages 30-42, Feb. 2010
4. G. D. Kurt, T. Girici, "Minimum-Outage Broadcast in Wireless Networks with Fading Channels", IEEE Communications Letters, Vol 14, Issue 7 pp. 617-619, Jul. 2010
5. O. Ozel, E. Uysal-Biyikoglu and T. Girici, "Optimal Buffer Partitioning on a Multiuser Wireless Link", IEICE Transactions on Communication, Vol.E94-B,No.12,pp.-,Dec. 2011
6. N. Tekbiyik, T. Girici,E. Uysal Biyikoglu, K. Leblebicioglu, "Proportional Fair Resource Allocation on an Energy Harvesting Downlink", IEEE Transactions on Wireless Communications, vol.12, no.4, pp.1699,1711, April 2013
7. A. C. Kazez, T. Girici, "OFDMA Based Multicast with Multiple Base Stations", Turkish Journal of Electrical Engineering and Computer Sciences, Volume 23, (2015), 1372-1383
8. Ceran, E. T., Erkilic, T., Uysal - Biyikoglu, E., Girici, T., & Leblebicioglu, K. . "Optimal energy allocation policies for a high altitude flying wireless access point". Transactions on Emerging Telecommunications Technologies, 28(4).
9. C. E. Kement; H. Gultekin; B. Tavli; T. Girici; S. Uludag, "Comparative Analysis of Load Shaping Based Privacy Preservation Strategies in Smart Grid," in IEEE Transactions on Industrial Informatics , vol.PP, no.99, pp.1-1
10. A. Akarsu, and T. Girici, "Fairness aware multiple drone base station deployment." IET Communications 12.4 (2017): 425-431.
11. G. Kilic, T. Girici, "Joint Channel and Power Allocation for Device-to-Device Underlay", Accepted to Elsevier Ad Hoc Networks Journal

12. A.C. Kazez, T. Girici, "Clustering-Based Device-to-Device Cache Placement", Accepted to, Elsevier Ad Hoc Networks Journal
13. A. Akarsu, and T. Girici, "Drone Base Station Deployment in Urban Warfare", submitted to IEEE Systems Journal
14. A. H. Kulaç, A. Akarsu, T. Girici, "Use of Metaheuristic Methods for Optimal Drone Base Station Placement", submitted to, Applied Soft Computing 2018

INTERNATIONAL CONFERENCE PUBLICATIONS

1. T. Girici, A. Ephremides, 'Joint Routing and Scheduling Metrics for Ad Hoc Wireless Networks', 36th Asilomar Conference on Signals Systems and Computers, Pacific Grove, CA, Nov. 2002
2. T. Girici, A. Ephremides, 'Energy -Efficient Multicasting for Connectionless Traffic in Wireless Ad Hoc Networks', International Symposium on Personal, Indoor, Mobile and Radio Communications (PIMRC), Beijing, China June 7-9, 2003
3. T. Girici, A. Ephremides, 'Optimal Power Control for Wireless Queueing Networks', 2004 Conference on Information Sciences and Systems (CISS 2004), Princeton University, NJ, March 17-19, 2004
4. T. Girici, A. Ephremides, 'Energy Efficient Power Control for Wireless Queueing Networks', 42nd Annual Allerton Conference on Communication, Control and Computing, Monticello, IL, Sept. 28-Oct. 1, 2004.
5. T. Girici, C. Zhu, J. Agre, A. Ephremides 'Proportional Fair Scheduling for WiMax Downlink Systems with QoS Constraints', 12th International OFDM Workshop, Hamburg Germany, Aug. 2007
6. T. Girici, C. Zhu, J. Agre, A. Ephremides 'Practical Resource Allocation for Downlink Systems with Heterogeneous Traffic', In proceedings of 2nd Broadband Wireless Access Workshop, Las Vegas, USA Jan 12 2008.
7. T. Girici, C. Zhu, J. Agre, A. Ephremides 'Methods for Radio Resource Management in Multihop Relay Networks', Accepted to, 6th symposium on Modelling and Optimization in Mobile Ad Hoc and Wireless Networks (WiOpt '08), Berlin, Germany, Mar 31 - Apr. 4 2008
8. T. Girici, A. Ephremides 'Queueing Analysis of an OFDMA Based Resource Allocation Scheme', In Proceedings of ISIT 2008, Toronto, Canada, Jul. 2008.
T. Girici, 'Fairness and QoS-Based Resource Allocation in Multihop Relay Networks', Accepted to, IEEE Wireless Communications and Networking Conference (WCNC), April 5-8th 2009.
9. O. Ozel, E. Uysal-Biyikoglu, and T. Girici, 'Optimal Buffer Partitioning on a Multiuser Wireless Link', to appear, Information Theory and Applications Workshop, UCSD, San Diego, CA, Jan. 31-Feb 5, 2010.
10. F. I. Sokmen, T. Girici, 'Energy-Efficient Resource Allocation in Cooperative OFDMA Systems', Accepted to, 5th International Wireless Internet Conference, WiCON 2010, March 1-3 Singapore. [Best Paper Award in MAC Track]

11. F. I. Sokmen, T. Girici, 'Uplink Resource Allocation Algorithms for Single-Carrier FDMA Systems', Accepted to, 16th European Wireless Conference, EW 2010, Lucca-Italy, April 12-15 2010
12. T. Girici, Ö. Özel, E. Uysal-Bıykoğlu, " Buffer Sharing on an OFDMA Downlink", IEEE Personal Indoor and Mobile Radio Communications Conference, PIMRC 2010, Istanbul Turkey October, 2010
13. G.D. Kurt, T. Girici, "Minimum-outage unicast routing in cooperative wireless networks," 7th International Wireless Communications and Mobile Computing Conference (IWCMC 2011), pp.743-748, 4-8 July 2011
14. T. Girici, A. C. Kazez "Energy Efficient Routing with Mutual Information Accumulation", 8th International workshop on Resource Allocation and Cooperation in Wireless Networks (RAWNET 2012) In conjunction with WiOpt 2012
15. N. Tekbiyik, E. Uysal-Biyikoglu, T. Girici and K. Leblebicioglu, "Utility-based Time and Power Allocation on an Energy Harvesting Downlink: The Optimal Solution ", 27th International Symposium on Computer and Information Sciences (ISCIS), Paris, France, 3-5 October 2012
16. N. Tekbiyik, E. Uysal-Biyikoglu, T. Girici and K. Leblebicioglu, "An Algorithm for Proportional-Fair Downlink Scheduling in the Presence of Energy Harvesting ", 27th International Symposium on Computer and Information Sciences (ISCIS), Paris, France, 3-5 October 2012 , to appear.
17. A. Yildiz, T. Girici, and H. Yanikomeroğlu, "A pricing based algorithm for cell switching off in green cellular networks", IEEE VTC2013-Spring, 2-5 June 2013, Dresden, Germany
18. M. Shakiba-Herfeh, E. Uysal Bıykoğlu and T. Girici, "Routing with Mutual Information Accumulation in Energy-Limited Wireless Networks", The 24th Tyrrhenian International Workshop on Digital Communications, Sep. 23-25 2013, Genoa Italy
19. A.S. Yıldırım, T. Girici "Cloud Technology and Performance Improvement with Intserv over Diffserv For Cloud Computing", The 2nd International Conference on Future Internet of Things and Cloud, (FiCloud 2014), Aug. 25-27 2014, Barcelona Spain
20. E.T. Ceran, T. Erkiçi, E. Uysal Bıykoğlu, T. Girici, K. Leblebicioğlu, "Optimizing The Service Policy Of A Wireless Access Point On The Move With Renewable Energy", Accepted to, 52nd Annual Allerton Conference on Communication, Control, and Computing , 2014.
21. G. Cigirkan, T. Girici and M. Yuksel. Efficient and Reliable Multicast of Data in APCO P25 Systems. IEEE 81st Vehicular Technology Conference, VTC2015-Spring, May 2015, Glasgow, Scotland.
22. R. Aziz, G. Kilic, T. Girici, T. Numanoglu, G. Yenihayat, H. Koca, "Clustering and Frequency Allocation in Frequency Hopping Tactical Networks", Accepted to, IEEE MILCOM 2015
23. F. Karababa, F. Küçük, T. Girici, "Fair Beam Allocation in Millimeter-Wave Multiuser Transmission" 21st International ITG Workshop on Smart Antennas, Mar. 15-17 2017, Berlin, Germany
24. A. C. Kazez, T. Girici "Interference-Aware Distributed Device-to-Device Caching", Blacksea-com 2017

25. E. Mete, T. Girici, "Joint Routing and Scheduling in NOMA-Enabled Wireless Networks", Balkancom 2018, Podgorica, Montenegro
26. R. Aziz, T. Girici, "Underlay D2D Communications Power Allocation Scheme in Massive MIMO Networks", Balkancom 2018, Podgorica, Montenegro
27. A. Akarsu, T. Girici, "Failure Aware Deployment of Drone Base Stations", Accepted to, 26th Telecommunications forum TELFOR 2018 Serbia, Belgrade, November 20-21, 2018

LOCAL CONFERENCE PUBLICATIONS

1. T. Girici, "Relay Station Placement in IEEE 802.16j-Based Systems", IEEE 17. Signal Processing and Communications Applications Conference, (SIU 2009), Antalya, Turkey
2. M. Duman, T. Girici "Routing in wireless networks using rateless codes", IEEE 19. Signal Processing and Communications Applications Conference, (SIU 2011), Antalya, Turkey
3. A. Yıldız, T. Girici "Fair resource allocation in OFDMA based relayed transmission", IEEE 20. Signal Processing and Communications Applications Conference, (SIU 2012), Ölüdeniz, Turkey
4. T. Girici, F. İ. Sökmen "OFDM based multicast using erasure code" IEEE 20. Signal Processing and Communications Applications Conference, (SIU 2012), Ölüdeniz, Turkey
5. N. Tekbıyık-Ersoy , E. Uysal Bıyıkoğlu , T. Girici , K. Leblebicioğlu , "Kalman prediction based proportional fair resource allocation for a solar powered base station", IEEE 21. Signal Processing and Communications Applications Conference, (SIU 2013), Girne, KKTC
6. T. Girici, "Routing using physical layer network coding", IEEE 21. Signal Processing and Communications Applications Conference, (SIU 2013), Girne, KKTC
7. G. Kilic, T. Girici "Clustering in cellular M2M communications", IEEE 22. Signal Processing and Communications Applications Conference, (SIU 2014), Trabzon, Turkey
8. G. Cigirkan, T. Girici "Usage of rateless codes in APCO radio systems", IEEE 22. Signal Processing and Communications Applications Conference, (SIU 2014), Trabzon, Turkey
9. A. Akarsu, T. Girici "Opportunistic Device-to-Device Communication in Wireless Downlink", (SIU 2015), Malatya, Turkey
10. G. Kilic, T. Girici, "Successive Interference Cancellation in Device-to-Device Communications", (SIU 2017), Antalya, Turkey
11. K. N. Aytac, T. Girici, M. Yuksel, A. Telli, M.I. Koksall, "Device-to-Device Caching for Video Streaming Content", (SIU 2017), Antalya, Turkey
12. A.H. Kulaç, A. Akarsu, and T. Girici, "Optimal deployment of UAV's for communication." 2018 26th Signal Processing and Communications Applications Conference (SIU). IEEE, 2018.

PATENTS

1. T. Girici, C. Zhu, J. Agre, "Proportional Fair Scheduling for WiMax Downlink Systems with QoS Constraints", United States Patent, US Patent US7768973
2. T. Girici, C. Zhu, J. Agre, A. Ephremides "A Practical Method for Resource Allocation for QoS in OFDMA Wireless Systems", Patent Pending (Joint Fujitsu-ISR), Pending
3. F. Küçük, M. K. Çetin, M. Yuksel, T. Girici, "5G Hücresel Ağlarda Önbellekleme", Patent Pending (joint TOBB ETU-Havelsan Inc.)

RESEARCH GRANTS

- PI TUBITAK 1001 Research Program. "Orthogonal Frequency Division Multiplexing (OFDM)-Based Resource Allocation in Cooperative Wireless Communications". Partners: Melda Yüksel and Onur Kaya. Duration: Jan. 2009- Jul. 2011. Budget: 217000 TL
- PI TUBITAK Career Award. "Routing in Wireless Networks Using Rateless Codes". Duration: March 2011-Marc 2013. Budget: 96000 TL
- PI San-Tez Program (Ministry of Science Industry and Technology). "Use of Rateless Codes in APCO 25 Wireless Systems". Duration: October 2012-October 2014. Budget: 76000 TL.
- PI San-Tez Program (Ministry of Science Industry and Technology). "Frequency Allocation and Routing in Frequency Hopped Ad Hoc Networks". Duration: October 2013-October 2015. Budget: 114000 TL.
- Researcher ASELSAN Inc. "Alternative Solutions for the Broadband Waveform ". Duration: January-July 2012. Budget: 28800
- PI TUBITAK 1001 Research Program. "Device to Device Communications in Wireless Systems", March 2016-2018 Budget 297000
- Co PI Havelsan Inc. "Wireless Caching in 5G Networks" Nov 2017-2018 Budget 128000 TL
- PI Anayurt Teknoloji, "HF/VHF Protocol Analysis Software", Nov 2018-Jul 2020, Budget 140000 TL

M.SC GRADUATES

1. Sami Deniz: Resource Allocation in Multibeam Satellites (Graduated:July 2010) Now at Coca Cola
2. Gülizar Duygu Kurt: Cooperative Unicast and Broadcast Routing in Wireless Networks (Graduated: January 2011) Now at Turkish Atomic Energy Institute
3. Fatma İrem Sökmen: Cooperative Resource Allocation in Multichannel Broadband Wireless Access (Graduated: January 2011) Now at Intel, Germany
4. Ahmet Cihat Kazez: Routing in Wireless Networks Using Rateless Codes (Graduated: December 2013) Now at Turkcell

5. Ali Yıldız: Energy-Efficient Cell Switch-off (Graduated: January 2014) Now at TAI - TUSAŞ
6. Abdullah Sinan Yıldırım: Cloud Technology and Performance Improvement with Intserv over Differv for Cloud Computing (Graduated: August 2014) Now at TAI - TUSAŞ
7. Gökhan Kılıç: Clustering and MAC in Frequency Hopped Tactical Wireless Networks (Graduated: October 2014) Now at ICTERRA
8. Gülay Çığırkan: Use of Rateless Codes in APCO 25 Wireless Systems (Graduated : November 2014) Now at Roketsan
9. Ravshan Aziz: Routing in Frequency Hopped Tactical Wireless Networks (Graduated: December 2014) Now at Thales
10. Firat Karababa: Beam allocation in mmWave Communications (Graduated: August 2017) Now at Aselsan
11. Ayca Hazel Kulac: Use of Metaheuristic Methods in Drone Base Station Placement (Graduated: August 2018) Now at TUBITAK-SAGE

PH. D STUDENTS

1. Ahmet Cihat Kazez: Caching [Jan 2014 - Current]
2. Alper Akarsu: Drone Commuunications [Jan 2014 - Current]
3. Ravshan Aziz: Beamforming in D2D Enabled Systems (September 2015 - Current)
4. Gökhan Kiliç: Resource Allocation in D2D Communications (Jan 2014 - Current)
5. Ezgi Mete: Non Orthogonal Multiple Access
6. Sevda Şahin: Cognitive Sense and Avoid Radar

SERVICE

- University:
 - Department Chair - TOBB ETU Department of Electrical and Electronics Engineering (Jan 2016 - Current)
 - Student Councilor - IEEE Student Branch at TOBB ETU (Sept 2013 - Current),
 - Member - TOBB ETU Engineering Faculty Administrative Board (Sept 2013 - Current),
 - Vice Chair - TOBB ETU Department of Electrical and Electronics Engineering (Jan 2014 - December 2015),
 - Member - TOBB ETU Registration Commission (Sept. 2010 - Mar. 2011),
 - Member - TOBB ETU ABET Commission (Nov. 2011 -),
 - Vice Dean - TOBB ETU Engineering Faculty Board (Jan 2012- Sept. 2013)
- Technical Program Committee Member: IEEE WCNC '12 '14, '15,'16 IEEE Globecom '12 '13, '14, '15 IEEE ICC '10,'12, IEEE PIMRC '14, '15, '16, IEEE SIU '12, '13, '14, '15
- Session Chair: IEEE SIU '13, '14, '15, '17, IEEE VTC '15, Balkancom 2017

- Referee in Journals:
IEEE Trans. on Comm. (3), IEEE Trans. on Information Theory(3), IEEE Trans. on Vehic. Tech. (15), IEEE Trans. on Wireless Comm. (7) IEEE Comm. Letters(62), IEEE Wirel. Comm. Lett. (1), Int. Journal of Satellite Comm.(2), IEEE Wireless Comm. Mag. (1), IEEE Trans. on Mobile Net. (4), Int. Journal of Comm. Sys. (5), Journal of Comm. and Net. (2), Int. Journal of Wireless Comm. and Mobile Net. (1), ACM Wireless Networks(1), Eurasip JWCN(2), Sensors(1), Ad Hoc Networks(1), Trans. on Emerging Telecom. Technologies (5), Turkish Journal of Electrical Engineering and Computer Sciences (11).
- Referee in Conferences:
IEEE Globecom '05, '08, '09, '11, '12, '13, '15, '17 IEEE CDC '03, IEEE VTC '09,'10,'11 IEEE ICC '02,'08, '09, '10, '11, '12, '13, '14, '17 IEEE INFOCOM '04, IEEE WCNC '08,'09,'10,'12, '13, '14, '15 IEEE PIMRC '09,'11, '13, '14 IEEE ISIT '10, SIU '10, '11, '12, '13, '14, '15,'17
- Referee: TTGV Project (1 Project), Ministry of Industry, R&D Centers (3 centers), TUBITAK TEYDEB Industrial R&D Grant (10+ projects), TUBITAK SAVTAG Defense R&D Grant (1 Project).
- Panel Member: TUBITAK 1001,2501 (40+ Projects), Min. of Science, Industry and Tech. Teknogirişim Young Entrepreneur Grant (12 Projects), Min. of Science, Industry and Tech. Industrial Theses Program (1 Project)
- Workshop member: Ministry of Transportation Vision 2023
- Member of numerous Theses and Dissertation Committees

HONORS AND AWARDS

- Senior Member: IEEE (1998 - Present) (Communication Society, Information Theory Society)
- Member: IEICE (2015 - Present) (B: Communications)
- IEEE Communications Letters Exemplary Reviewer: Due to the dedication and expertise in the art of paper reviewing (2013).
- Best Paper Award: WICON 2010 Conference, MAC Track (Among 10 Papers)
- Grand Prize: MERIT Project (supervised two undergraduate students) Summer 2002
http://www.ece.umd.edu/RITE/merit_fair02.htm
- Assistantship and Tuition Remission, University of Maryland, 2000
- Bronze Medal in National Chemistry Olympics, 1995

TEACHING

- ELE 101 Introduction to Electrical and Electronics Engineering(Spring 2014, Spring 2016, Spring 2017, Spring 2018)
- ELE 202 Circuit Analysis II(Spring 2008,Summer 2008,Summer 2009, Summer 2010, Fall 2010, Fall 2011, Spring 2013, Fall 2016, Fall 2017)
- ELE 224 Electronic Circuits (Fall 2018)

- ELE 273 Probability for Electrical Engineers(Summer 2014, Fall 2015)
- ELE 361 Communication Systems (Summer 2009, Summer 2011, Spring 2012, Fall 2013, Fall 2014, Fall 2015, Fall 2017)
- ELE 361L Communication Systems Laboratory (Summer 2009, Summer 2011, Spring 2012, Fall 2012, Fall 2014, Fall 2015, Fall 2017, Summer 2018)
- ELE 371 Signals and Systems (Spring 2015)
- ELE 463/563 Communication Networks (Spring 2008, Spring 2009, Spring 2010, Spring 2011, Spring 2015)
- ELE 561 Wireless Communications (Spring 2017)
- ELE 562 Satellite Communication Systems (Spring 2011, Spring 2012, Summer 2013, Summer 2018)
- ELE 564 Digital Communications (Fall 2012, Spring 2016)
- ELE 574 Random Processes (Summer 2013, Fall 2015, Fall 2016, Fall 2017)

COMPUTER SKILLS

- Languages: C, Pascal
- Applications: Current: MATLAB, GAMS, Latex, MS Office. Past: Tanner Tools, Cadence, E. Workbench, HP VEE, Xilinx
- Operating Systems: Ubuntu Linux, Windows. Past: Unix