Ömer KORÇAK

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Nationality: Turkey
Gender: Male
Marital Status: Married with three children

RESEARCH INTERESTS

- Network Economics
- Network Optimization
- Game Theoretical Applications in Wireless Networks
- Satellite and Space Networks
- Cognitive Radio Networks
- All-optical networking

EDUCATION

Boğaziçi University, Istanbul, Turkey
- PhD, Computer Engineering, 2009.
- GPA: 3.82 / 4.00

Boğaziçi University, Istanbul, Turkey
- MSc, Computer Engineering, 2004.
- GPA: 3.50 / 4.00

Boğaziçi University, Istanbul, Turkey
- BS, Computer Engineering, 2002.
- GPA: 3.63 / 4.00 (3rd Rank)

Atatürk Anadolu Lisesi, Ankara, Turkey
- High School, 1997.
- GPA: 4.63 / 5.00

PUBLICATIONS

Journals (SCI, SCI-E)
- İ. Demirci, Ö. Korçak, "Cell Breathing Algorithms for Load Balancing in Wi-Fi/Cellular Heterogeneous Networks", submitted.
- Ö.Korçak, "A Channel Sensing Game in Cognitive Radio Networks", under preparation.
- Ö.Korçak, G.Iosifidis, T.Alpcan, I.Koutsopoulos, "Operator Collusion and Market Regulation Policies for Wireless Spectrum Management", IEEE Transactions on Mobile Computing, vol. 15, no. 10, pp. 2537-2549, 2016.
- Ö.Korçak, F.Alagöz, "Efficient Integration of HAPs and Mobile Satellites via Free-space Optical Links", Computer Networks, vol. 55, bo. 13, pp. 2942-2953, September 2011.
- Ö.Korçak, F.Alagöz, "Virtual Topology Dynamics and Handover Mechanisms in Earth-fixed Satellite Systems", Computer Networks, vol. 53, no. 9, pp. 1497-1511, June 2009.
- F.Alagöz, Ö.Korçak, A.Jamalipour, "Exploring the Routing Strategies in Next-Generation Satellite Networks", IEEE Wireless Communications, vol. 14, no. 3, June 2007.
- Ö.Korçak, F.Alagöz, A.Jamalipour, "Priority-based Adaptive Routing in NGEO Satellite Networks", International Journal of Communication Systems, vol. 20, no. 3, pp. 313-333, March 2007.

Journals (Others)
- Ö.Korçak, F.Alagöz, "Yeni Nesil Uydu Ağlarında Yol Atama", Iletişim Çağı Dergisi, 4. Sayı, Nisan 2006. (TURKISH)

International Conferences (peer reviewed)
- A. Özlü, K. Uludağ, Ö. Korçak, "User Provided Network System with Incentive Mechanism", IEEE SIU, Antalya, Turkey, 2017 (Turkish).
- S.E.Taşçi, Ö.Korçak, "Incentivizing User Provided Connectivity for Enhanced Quality of Service", IEEE PIMRC, Valencia, Spain, September 2016.
- I.Demirci, Ö.Korçak, "Gap-free Load Balancing Algorithms in Wireless LANs Using Cell Breathing Technique", IEEE ANTS, New Delhi, India, December 2014.
- Y.Yılmaz, Ö.Korçak, "Development of Online Social Media For Fan Groups: How to Exploit Existing Social Networks", PANSOM'13 (in conjunction with IJCAI'13), Beijing, China, August 2013.
- Ö.Korçak, G.Iosifidis, T.Alpcan, I.Koutsopoulos "Competition and Regulation in a Wireless Operators Markets: An Evolutionary Game Perspective", NetGCoop 2012, Avignon, France.
- Ö.Korçak, T.Alpcan, G.Iosifidis, "Collusion of Operators in Wireless Spectrum Markets", WiOpt, Paderborn, Germany, May 2012.

- Ö.Korçak, "Equilibrium Strategies in a Channel Sensing Game in Cognitive Radio Networks", Eighth IFIP/IEEE International Conference on Wireless and Optical Communications Networks (WOCN), Paris, France, May 2011.
- Ö.Korçak, F.Alagöz, "Link-layer Handover in Earth-fixed Satellite Systems", IEEE ICC, Dresden, Germany, Jun. 2009.
- Ö.Korçak, F.Alagöz, "Efficient Networking in an Integrated HAP and Mobile Satellite System with Optical Links", Sixth IFIP/IEEE International Conference on Wireless and Optical Communications Networks (WOCN), Cairo, Egypt, April 2009.
- Ö.Korçak, F.Alagöz, "Multi-state Virtual Network Architecture for Next Generation Satellite Networks", IEEE GLOBECOM, Washington D.C., Nov. 2007.
- Ö.Korçak, F.Alagöz, "Traffic Aware Beam Management in Next Generation Satellite Networks" International Workshop on Satellite and Space Communications (IWSSC), Salzburg, Austria, Sept. 2007.
- Ö.Korçak, F.Alagöz, "Deflection Routing over Prioritized Intersatellite Links in LEO Satellite Networks" 2nd IEEE International Conference on Information & Communication Technologies: from Theory to Applications (ICTTA), Damascus, Syria, April 2006.
- Ö.Korçak, F.Alagöz, "Analysis of Priority-based Adaptive Routing in Satellite Networks", International Workshop on Satellite and Space Communications (IWSSC), Siena, Italy, Sept. 2005.
- Ö.Korçak, F.Alagöz, "Priority-based Adaptive Shortest Path Routing for IP over LEO Satellite Networks", 23rd AIAA International Communications Satellite Systems Conference (ICSSC), Rome, Italy, Sept. 2005.
- Ö.Korçak, H.G.Çalıklı, I.Kaya, F.Alagöz, "Performance Evaluation of Adaptive and Static Routing Algorithms and Contention Resolution Techniques in LEO Satellite Constellations", IEEE/AIAA Recent Advances in Space Technologies, Istanbul, Turkey, June 2005.
- Ö.Korçak, M.Zeren, and F.Alagöz, "A New Approach for Wavelength Assignment in Optical Burst Switching Networks", Second IFIP/IEEE International Conference on Wireless and Optical Communications Networks (WOCN), Dubai, UAE, March 2005.

Thesis / Books
- Ö.Korçak, "Routing and Mobility Management in Next Generation Satellite Networks", PhD Thesis, Boğaziçi University, Istanbul, Turkey, 2009 (Supervisor: Fatih Alagöz).
- Ö.Korçak, "Learning-based Wavelength Assignment in Optical Burst Switching Networks", MSc Thesis, Boğaziçi University, Istanbul, Turkey, 2004 (Supervisor: Murat Zeren).
- A.Yurdakul, Ö.Korçak, O.Irfanoğlu, R.Koşar, "Digital Design Experiments with LABVIEW and XILINX-ISE", 244 pages, 23 cm, ISBN: 975-518-219-5, Boğaziçi University Printhouse, February 2004.
- Ö.Korçak, "Implementation of MEGACO Protocol", BSc Thesis, Boğaziçi University, Istanbul, Turkey, 2002 (Supervisor: M. Ufuk Çağlayan).

Technical Reports
- Ö.Korçak, G. Iosifidis, T. Alpcan, and I. Koutsopoulos, "Competition and Regulation in Wireless Services Markets", Technical Report, http://arxiv.org/abs/1112.2437, 2011.

THESIS

PhD Thesis: *Routing and Mobility Management in Next Generation Satellite Networks*
- Developed a novel priority-based adaptive routing (PAR) algorithm for nongeosynchronous satellite networks. This algorithm enables effective use of multiple minimum-hop paths in a satellite network in order to distribute traffic to inter-satellite links (ISL) in a balanced way and to improve the performance of the system.
- Extended a well known mobility-management technique called Virtual Node (VN) and proposed Multi-state Virtual Network (MSVN) topology for Earth-fixed satellite networks.
- Developed efficient handover mechanisms and beam management techniques in MSVN based satellite systems.
- Proposed an efficient solution for integration of NGEO satellites with High Altitude Platforms (HAPs) via high capacity free-space optical links for carrying dense and realtime multimedia traffic.

MSc Thesis: *Learning-based Wavelength Assignment in Optical Burst Switching Networks*
- Proposed a learning-based wavelength assignment (LWA) technique in sparse wavelength conversion capable OBS networks, in order to decrease the burst drop probability, as well as support relative quality of service (QoS) and reduce end-to-end delay.
- Proposed a dynamic burst aggregation mechanism to speed up the learning phase of LWA.

BSc Thesis: *Implementation of MEGACO protocol*
- Implementation of the Media Gateway Control (MEGACO) Protocol in JAVA as a part of a voice over IP system.

RESEARCH PROJECTS INVOLVED

Next Generation Satellite Networks and Applications (2006-2009)
- DPT Project (Grant Number: 2003K – 120250), Budget: $800.000
- Position: Researcher

Telematics Research Center (TAM) project (2009-2010)
- DPT Project, Budget: $7.500.000
- Position: Senior Researcher

Collusion of Operators in Wireless Spectrum Markets and Countermeasures (2012-2014)
- Marmara University BAPKO Project, Budget: $20.000
- Position: Project Manager

Rational Drug Use Project (2013)

- SGK Project
- Position: Researcher

Incetive Mechanisms in User Provided Networks (2015-2018)
- TUBITAK Career Award, Budget: 256.000 TL
- Position: Project Manager

STUDENTS

MSc Graduates
- Yusuf Yılmaz (2013)
- İlhan Demirci (2014)

Current PhD Students
- Sinan Emre Taşçi
- İlhan Demirci

Current MSc Students
- Kübra Uludağ
- Kerem Aytaç
- Kenan Cebeci

PROFESSIONAL EXPERIENCE

Assistant Professor, Marmara University (01/2011 – now)

Vice Chair, Computer Engineering Dept., Marmara University (02/2012 – now)

Postdoctoral Researcher (07/2011 – 01/2012)
- Deutsche Telekom Laboratories, TU-Berlin, Germany.
- Get experienced on non-cooperative, cooperative and evolutionary game theory.
- Involved in a project on Competition, Cooperation and Regulation in Wireless Spectrum Markets.

Military Service (12/2009 – 11/2010)
- HAWK Missile System Maintenance Officer, Turkish Air Forces
- Involved in a confidential project (as technical manager) that contributes more than 1.150.000 to the Turkish Air Forces.

Postdoctoral Researcher (06/2009 – 12/2009)
- Telematics Research Center, Bogazici University, Kandilli, Istanbul.
- Guided several MSc thesis.
- Conduct research on algorithmic game theory and application of game theory in wireless networks.

Research Assistant, Boğaziçi University (10/2005 – 05/2009)
- Active role in writing project proposals, technical reports.
- Involved in several research projects.
- Participated in various international conferences.
- Conduct research on routing and mobility management in NextG satellite networks.

Teaching Assistant, Boğaziçi University (10/2002 – 09/2005)
- Assisted several courses.
- Worked as a system admin of the Computer Engineering Department.

TEACHING EXPERIENCE

- Taught following courses at Marmara University:
  - CSE 246 Analysis of Algorithms (undergrad)
  - CSE 474 Computer Networks (undergrad)
  - CSE 475 Wireless and Mobile Networks (undergrad)
  - CSE 459 Internet Programming (undergrad)
  - CSE 720 Advanced Computer Networks (grad)
  - CSE 817 Game Theory in Computer Engineering (grad)

- Taught following courses at Istanbul Kultur University:
  - Network Science (grad)

- Taught following courses at Fatih Sultan Mehmet Vakif University:
  - Wireless Telecommunication Systems (undergrad)
  - Computer System Security (undergrad)
  - Advanced Design and Analysis of Algorithms (grad)
  - Cryptography and Network Security (grad)

AWARDS AND ACCOMPLISHMENTS

- 3rd standing and High Honor Degree, Boğaziçi University, Computer Engineering, 2002.
- TUBITAK National PhD scholarship, 2005-2009.

- TUBITAK International Postdoctoral Research Scholarship, 2011-2012.
- TUBITAK Career Award, 2015.
- Ranked 378th among ~1.500.000 students in nation-wide university entrance exam (ÖYS, 1997).
- Ranked 17th among ~80.000 graduate students in nation-wide graduate education exam (LES, 2001).

PROFESSIONAL ACTIVITIES

TPC Member:
- IEEE ICSPC 2007, ICSG 2017.

Reviewer:
- *SCI Journals:* Computer Networks, IEEE Journal on Selected Areas of Communications, Mobile Networks & Applications, Int. Journal on Communication Systems, IEEE Transactions on Computers,…
- *International Conferences:* ICC, Globecom, ISWPC, IWSSC, ICTTA, ISCIS, ICSPC, ISCN, ...

Member:
- IEEE, IEEE Communication Society
- Computer Networks Lab (NETLAB), Satellite Networks Lab (SATLAB) in Bogazici University

- MUDEK Coordinator, Computer Engineering Dept., Marmara University