

## Assoc.Prof.Didem Gözüpek

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Dept. of Computer Engineering  
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### RESEARCH INTERESTS EDUCATION

Structural and algorithmic graph theory, approximation algorithms, optimization problems in communication networks

**Boğaziçi University**, Istanbul, Turkey

PhD, **Computer Engineering** (2008 – 2012)

**New Jersey Institute of Technology**, NJ, USA

MS, **Electrical and Computer Engineering** (2004 – 2005)

**Sabancı University**, Istanbul, Turkey

BS, **Telecommunications Engineering** (1999 – 2004)

**Izmir Science High School (Izmir Fen Lisesi)**, Izmir, Turkey

High School Diploma (1996 – 1999)

### PUBLICATIONS

#### Journals (SCI/SCI-E)

- D.Gözüpek, A.Hujdurović, M.Milanić, “Characterizations of minimal dominating sets and the well-dominated property in lexicographic product graphs”, accepted to *Discrete Mathematics and Theoretical Computer Science*, 2017.
- Ş.Batı, D.Gözüpek, “Joint optimization of cash management and routing for new-generation automated teller machine networks”, accepted to *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, 2017.
- D.Gözüpek, S.Özkan, C.Paul, I.Sau, M.Shalom, “Parameterized complexity of the MINCCA problem on graphs of bounded decomposability”, *Theoretical Computer Science*, vol.690, pp.91-103, 2017.
- C.Beşiktaş, D.Gözüpek, A.Ulaş, E.Lokman, “Secure virtual network embedding with flexible bandwidth-based revenue maximization”, *Computer Networks*, vol.121, pp.89-99, 2017.
- Y.Büyükçolak, D.Gözüpek, S.Özkan, M.Shalom, “On one extension of Dirac’s theorem on Hamiltonicity”, accepted to *Discrete Applied Mathematics*, 2017.
- M.F.Tüysüz, Z.K.Ankaralı, D.Gözüpek, “A survey on energy efficiency in software defined networks”, *Computer Networks*, vol.113, pp.188-204, 2017.
- N.Chiarelli, C.Dibek, T.Ekim, D.Gözüpek, S.Miklavic, “On matching extendability of lexicographic products”, accepted to *RAIRO-Operations Research*, 2016.
- C.Dibek, T.Ekim, D.Gözüpek, M.Shalom, “Equipmatchable graphs are  $C_{2k+1}$ -free for  $k \geq 4$ ”, *Discrete Mathematics*, vol.339, no.12, pp.2964-2969, 2016.
- D.Gözüpek, H.Shachnai, M.Shalom, S.Zaks, “Constructing minimum changeover cost arborescences in bounded treewidth graphs”, *Theoretical Computer Science*, vol.621, pp.22-36, 2016.
- F.Ekici, D.Gözüpek “Joint overlay routing and relay assignment for green networks”, *Computer Networks*, vol.79, pp.323-344, 2015.
- D.Gözüpek, M.Shalom, F.Alagöz, “A graph-theoretic approach to scheduling in cognitive radio networks”, *IEEE/ACM Transactions on Networking*, vol.23, no.1, pp.317-328, 2015.
- D.Gözüpek, M.Shalom, A.Voloshin, S.Zaks “On the complexity of constructing minimum changeover cost arborescences”, *Theoretical Computer Science*, vol.540-541, pp.40-52, 2014.

- D.Gözüpek, S.Buhari, F.Alagöz, “A spectrum switching delay-aware scheduling algorithm for centralized cognitive radio networks”, *IEEE Transactions on Mobile Computing*, vol.12, no.7, pp.1270-1280, 2013.
- D.Gözüpek, B.Eraslan, F.Alagöz, “Throughput satisfaction-based scheduling for cognitive radio networks”, *IEEE Transactions on Vehicular Technology*, vol.61, no.9, pp.4079-4094, 2012.
- B.Eraslan, D.Gözüpek, F.Alagöz, “An auction theory-based algorithm for throughput maximizing scheduling in centralized cognitive radio networks”, *IEEE Communications Letters*, vol.15, no.7, pp.734-736, 2011.
- D.Gözüpek, F.Alagöz, “Genetic algorithm-based scheduling in cognitive radio networks under interference temperature constraints”, *Wiley’s International Journal of Communication Systems (IJCS)*, vol.24, no.2, pp.239-257, 2011.
- D.Gözüpek, F.Alagöz, “Throughput and delay optimal scheduling in cognitive radio networks under interference temperature constraints”, *Journal of Communications and Networks (JCN)*, vol.11, no.2, pp.147-155, 2009.
- D.Gözüpek, S.Papavassiliou, N.Ansari, “Enhancing quality of service provisioning in wireless ad hoc networks using service vector paradigm”, *Wiley Journal on Wireless Communications and Mobile Computing (WCMC)*, vol.6, no.7, pp.1003-1015, 2006.

### Technical Reports

- D.Gözüpek, F.Alagöz, “A fair scheduling model for centralized cognitive radio networks”, arXiv preprint:1309.2233, 2013. Available: <http://arxiv.org/pdf/1309.2233v1.pdf>

### Book Chapters

- D.Gözüpek, F.Alagöz, “An opportunistic pervasive networking paradigm: Multi-hop cognitive radio networks”, Chapter 7 in *Pervasive Computing and Networking*, John Wiley & Sons, Ltd., UK, 2011.

### International Conferences

- J.Baste, D.Gözüpek, C.Paul, I.Sau, M.Shalom, D.M.Thilikos, “Parameterized complexity of finding a spanning tree with minimum reload cost diameter”, accepted to *International Symposium on Parameterized and Exact Computation (IPEC)*, Vienna, Austria, 2017.
- D.Gözüpek, S.Özkan, C.Paul, I.Sau, M.Shalom, “Parameterized complexity of the MINCCA problem on graphs of bounded decomposability”, accepted to *International Workshop on Graph-Theoretic Concepts in Computer Science (WG)*, Istanbul, Turkey, 2016.
- C.Besiktas, D.Gözüpek, A.Ulas, E.Lokman, Ö.Özyurt, K.Ulusoy, “Flexible bandwidth-based virtual network embedding”, accepted to *IEEE Network Operations and Management Symposium (NOMS)*, Istanbul, Turkey, 2016.
- N.T.Altan Akin, D.Gözüpek, “Energy-fair routing in multi-domain green networks”, *International Conference on Software, Telecommunications and Computer Networks (SoftCOM)*, Split-Bol (Island of Brac), Croatia, 2015.
- H.Alizadeh, D.Gözüpek, S.Buhari, A.Yayimli, “Minimizing signaling cost in green routing for software defined networks”, *IEEE Symposium on Computers and Communications (ISCC)*, Larnaca, Cyprus, 2015.
- D.Gözüpek, M.Shalom, “Edge coloring with minimum reload/changeover costs”, *Algorithmic Graph Theory on the Adriatic Coast (AGTAC)*, Koper, Slovenia, 2015.
- C.Dibek, T.Ekim, D.Gözüpek, M.Shalom, “Equipmatchable graphs are  $C_{2k+1}$ -free for  $k \geq 4$ ”, *13<sup>th</sup> Cologne-Twente Workshop on Graphs and Combinatorial Optimization*, Istanbul, Turkey, 2015.
- D.Gözüpek, H.Shachnai, M.Shalom, S.Zaks, “Constructing minimum changeover cost arborescences in bounded treewidth graphs”, *13<sup>th</sup> Cologne-Twente Workshop on Graphs and Combinatorial Optimization*, Istanbul, Turkey, 2015.
- D.Gözüpek, M.Shalom, “Edge coloring with minimum reload/changeover costs”, *13<sup>th</sup> Cologne-Twente Workshop on Graphs and Combinatorial Optimization*, Istanbul, Turkey, 2015.
- Y.Büyükoçlak, D.Gözüpek, S.Özkan, “Extension of Dirac theorem on Hamiltonicity”, *13<sup>th</sup> Cologne-Twente Workshop on Graphs and Combinatorial Optimization*, Istanbul, Turkey, 2015.

- M.Çamurli, D.Gözüpek, “Channel switching cost-aware resource allocation for multi-hop cognitive radio networks with a single transceiver”, *International Conference on Ad hoc Networks (ADHOCNETS)*, 2014.
- M.R.Çelenlioğlu, D.Gözüpek, H.A.Mantar, ”A survey on the energy efficiency of vertical handover mechanisms”, *International Conference on Wireless and Mobile Networks (WiMoN)*, Istanbul, Turkey, 2013.
- D.Gözüpek, M.Shalom, A.Voloshin, S.Zaks, “On the complexity of constructing minimum reload cost path-trees”, *International Symposium on Combinatorial Optimization (ISCO)*, Athens, Greece, 2012.
- D.Gözüpek, F.Alagöz, “An interference aware throughput maximizing scheduler for centralized cognitive radio networks”, *IEEE International Symposium on Personal, Indoor, and Mobile Radio Communications (PIMRC'10)*, Istanbul, 2010.
- D.Gözüpek, G.Genç, C.Ersoy, “Channel assignment problem in cellular networks: A reactive tabu search approach”, *IEEE International Symposium on Computer and Information Sciences (ISCIS'09)*, Northern Cyprus, 2009.
- D.Gözüpek, F.Alagöz, “Scheduling in cognitive radio networks”, *Google Anita Borg Meeting*, Zürich, Switzerland, 2009.
- D.Gözüpek, S.Bayhan, F.Alagöz, “A novel handover protocol to prevent hidden node problem in satellite assisted cognitive radio networks”, *IEEE International Symposium on Wireless Pervasive Computing (ISWPC'08)*, pp.693 – 696, Santorini, Greece, 2008.
- D.Gözüpek, A.Sever, “Service concentration node in IMS”, *Lecture Notes in Computer Science (LNCS), International Conference on Next Generation Teletraffic and Wired/Wireless Advanced Networking (NEW2AN'08)*, vol.5174, pp.169 – 176, St.Petersburg, Russia, 2008.
- D.Gözüpek, S.Papavassiliou, N.Ansari, J.Yang, “A power efficient qos provisioning architecture for wireless ad hoc networks”, *IEEE International Conference on Communications (ICC'06)*, vol.8, pp.3873 – 3878, Istanbul, 2006.
- D.Gözüpek, S.Papavassiliou, N.Ansari, “A cross-layer architecture for end-to-end qos provisioning in wireless ad hoc networks”, *International Symposium on Communication Systems, Networks and Digital Signal Processing (CSNDSP'06)*, Patras, Greece, 2006.

#### AWARDS AND ACCOMPLISHMENTS

- CAREER Award, [Scientific and Technological Research Council of Turkey \(TUBITAK\)](#) (2014)
- Dr.Serhat Özyar Young Scientist of the Year Honorary Award (2013)
- Best PhD Thesis Award, BAP, Bogazici University (2012)
- ASELSAN PhD Fellowship (2011)
- Finalist for [Google Anita Borg Memorial Scholarship in the EMENA region](#) (4/2009)
- TUBITAK national PhD scholarship (2010)
- TUBITAK international research scholarship (2011)
- Marquis Who's Who in the World (2010)
- *Research Assistantship* covering full tuition and stipend, [NJIT, USA](#) (2004 – 2005)
- Graduated with *High Honors* and ranked 5<sup>th</sup> in [Telecommunications Engineering, Sabancı University](#) (2004)
- *Merit Scholarship*, covering full tuition and accommodation, [Sabancı University](#) (1999 – 2004)
- Ranked in the top 0.03% in the central nationwide university entrance exams (1999)

#### FUNDED PROJECTS

- Principal Investigator, “Reload cost concept in graph theory: A combinatorial analysis”, funded by TUBITAK-CNRS, Turkey-France Bilateral Research Project No: 114E731, 2015-2017
- Principal Investigator, “Fairness and energy efficiency in resource management for federated software defined networks”, funded by TUBITAK (1001 Program), Project No: 114E245, 2014-2017
- Principal Investigator, “Resource allocation and routing for green networks”, CAREER Project, funded by TUBITAK, Project No: 113E567, 2014-2017
- Principal Investigator, “A software defined networking approach to resource management in virtual networks”, University-Industry Collaboration Project, funded by Argela Technologies, 2014-2015

- Principal Investigator, “Energy-fair routing in green multi-domain networks”, funded by Scientific Research Projects Office of Gebze Technical University (GTU BAP), Project No: 2014 A27, 2014-2016
- Principal Investigator, “Minimum changeover cost graph problems”, funded by Scientific Research Projects Office of Gebze Technical University (GTU BAP), Project No: 2013 A24, 2013-2015
- Researcher, “New trends in matching theory”, funded by TUBITAK-ARRS, Turkey-Slovenia Bilateral Research Project No: 213M620, 2014-2017
- Collaborator, “SINCERE: Scheduling in infrastructure-based cognitive radio networks”, 1001 Project, funded by TUBITAK, Project No: 109E256, 2009-2012
- Collaborator, “Scheduling in cognitive radio networks”, funded Scientific Research Projects Office of Bogazici University (BAP), Project No: 09A108P, 2009-2010

PROFESSIONAL  
EXPERIENCE

**Associate Professor**

Computer Engineering Department, Gebze Technical University, Kocaeli, Turkey (4/2016-Present)

**Assistant Professor**

Computer Engineering Department, Gebze Technical University, Kocaeli, Turkey (8/2012-4/2016)

**Director**

Graph Theory & Network Optimization Research Laboratory  
Computer Engineering Department, Gebze Technical University

**Visiting Researcher**

Computer Science Department, Technion-Israel Institute of Technology, Haifa, Israel (5/2011)

- Hosts: Assist.Prof.Mordechai Shalom and Prof.Shmuel Zaks
- Supported by Israel Science Foundation

**Researcher**

Telematics Research Center and Computer Networks Research Laboratory  
Computer Engineering, Boğaziçi University (2008-2012)

- Supported by the State Planning Organization of Turkey (DPT)

**R&D Engineer**

Argela Technologies, Turkish Telecom, Istanbul (2005 – 2008)

**Research Assistant**

Electrical and Computer Engineering  
New Jersey Institute of Technology (NJIT), USA (2004 – 2005)

- Supported by the National Science Foundation (NSF)

SUPERVISED  
STUDENTS

- Selim Bahadır, “New aspects of total domination in graphs” (Postdoc)
- Hadi Alizadeh, PhD Thesis title: “On well-dominated graphs” (in progress)
- Yasemin Büyükçolak, PhD Thesis title: “On equimatchable and well-covered graphs” (in progress)
- Sercan Demirci, PhD Thesis title: “Frequency switching cost-aware resource allocation and routing in cognitive radio networks” (in progress)
- Şeyma Batı, MS Thesis title: “Joint optimization of cash management and routing for new generation automated teller machine networks”, 2016

- Hadi Alizadeh, MS Thesis title: “Minimizing signaling cost in green routing for software defined networks”, 2015
- Fatma Ekici, MS Thesis title: “Joint overlay routing and relay assignment for green networks”, 2014
- Başak Eraslan, MS Thesis title: “Heuristic algorithms for scheduling in cognitive radio networks”, 2011
- Mohamed Haji Dahir, MS Thesis title: “Virtual network assignment in federated software defined networks” (in progress)
- Mustafa Çamurli, MS Thesis title: “Energy-efficient resource allocation in cognitive radio networks” (in progress)

## TEACHING EXPERIENCE

- CSE-522 Graph Algorithms and Applications (Spring 2016, Spring 2017)
- CSE-719 Special Topics in Computer Engineering (Fall 2015)
- CSE-721 Special Topics in Algorithms (Spring 2014, Spring 2015, Fall 2016)
- CSE-321 Introduction to Algorithm Design (Fall 2014, Fall 2015, Fall 2016)
- CSE-521 Algorithm Analysis and Design (Spring 2013)
- CSE-444 Software Engineering-II (Spring 2014, Spring 2015, Spring 2016, Spring 2017)
- CSE-443 Object Oriented Analysis and Design (Spring 2013, Fall 2013, Fall 2014, Fall 2015)
- CSE-211 Discrete Mathematics (Fall 2012)
- CSE-574 Design and Analysis of TCP/IP Networks (Fall 2012, Fall 2014)
- CMPE 581 Communications Engineering for Mobile/Wireless Networks, Fall 2010-2011 (Co-lectured)
- CMPE 300 Analysis of Algorithms, Summer 2011 (Co-lectured)

## SKILLS

### Computer Skills

- Proficient in C/C++, Java, CPLEX, Matlab, and OPNET
- SIP, VoIP, 3G, GSM, SS7
- Operating Systems: Unix, Linux, and Windows

### Language Skills

- English (Advanced), German (Intermediate), Turkish (Native)

## PROFESSIONAL SERVICE

### Editor

Journal of Circuits, Systems, and Computers (JCSC)

Turkish Journal of Electrical Engineering and Computer Sciences

### TPC Member

IEEE Globecom’07, SPACOMM’09, RUSMART’09

### Reviewer

Discrete Mathematics, Discrete Applied Mathematics, IEEE/ACM Transactions on Networking, IEEE Transactions on Wireless Communications, IEEE Transactions on Vehicular Technology, IEEE Communications Magazine, PIMRC’08, IWSSC’08, ICC’09, etc.

### Organizing Committee Member

Co-organizer, Departmental Research Seminars, Gebze Technical University Computer Engineering, 2017

Co-organizer, Workshop on Graph Theory and Its Applications, Istanbul Center for Mathematical Sciences, 2016

Posters Co-chair, IEEE Network Operations and Management Symposium (IEEE NOMS), Istanbul, 2016

Ismail Ari Computer Science and Engineering Summer School, Istanbul, 2015

International Symposium on Computer Networks (ISCN'08)