

Kivilcim YÜKSEL ALDOGAN

Personal Information

Female, Married with one child Citizenship: TR, BE

Fluent in English and French

Address: Izmir Institute of Technology (IzTECH), Electronics Eng. Dept.,
Gulbahce Kampusu, 35430, Izmir TR

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Professional activities

Dr. Yüksel is leading the Optical Fiber Metrology and Sensors Laboratory as a complementary part of the ongoing research at the Electrical and Electronics Engineering Department on the photonics domain.

She has been academic board member of Photonics Department at IzTECH since 2016, and research associate at University of Mons, Belgium since 2013.

Employment

- January 2021-present, associate professor, Izmir Institute of Technology (IzTECH), İzmir, Türkiye.
- March 2012-2021, assistant professor, Izmir Institute of Technology (IzTECH), İzmir, Türkiye.
- June 2011-March 2012, research engineer, Université de Mons, (UMONS, Belgium).
- 2005-2011, teaching and research assistant, (FPMs, UMONS, Belgium).
- 2002-2005, research engineer, MULTITEL, Applied Photonics Department, Mons, Belgium (<http://www.multitel.be/>).
- 2000-2001, optical research engineer, NETAS, Istanbul, Türkiye.
- 1996-2000, teaching assistant, Electronics Engineering Department, Ege University, Izmir, Türkiye.

Education

- Ph.D. November 2006 - June 2011, fiber optics, Université de Mons (BE)
thesis subject: Development of an optical frequency-domain reflectometer and applications to the interrogation of fiber Bragg gratings
supervisors: Prof.Dr. Marc Wuilpart and Prof.Dr. Patrice Mégret

Doctoral Schools Attended as a PhD student:

- Doctoral School IAP, Interuniversity Attraction Poles (IAP)-Phase VI (2007-2011) doctoral school, Photonics@be-micro, -nano and quantum photonics., March 2009, Oostduinkerke, Belgium.
 - Summer School, BONE European Network of Excellence, October, 2008, Mons, Belgium.
 - Doctoral School (Photonis Technology Lectures) held at three Universities: PhLAM, University of Lille (Lille, France), ULB (Brussels, Belgium), FPMs (Mons, Belgium), 2008.
 - Doctoral School (Metamorphose), January 2008, University of Liege, Belgium. COST 291 Summer School, July 2007, ENST, Brest, France.
- DEA (Diplome d'études approfondies), Fiber optics, Faculté Polytechnique de Mons (BE), October, 2006.
DEA Thesis: Sensor Applications of Brillouin Effect,
supervisor: Prof.Dr. Patrice Mégret, GPA: 18/20.
 - M.S. Electronics, Ege University, Izmir (TR), February, 2000.
Master Thesis: Performance Analysis of Optically Pre-Amplified Receivers in Digital Optical Communication Systems,
supervisor: Prof.Dr. Gökalp Kahraman, GPA: 83/100.
 - Academic English Preparatory Class Foreign Languages Department, Ege University, 1996.
 - B.S. Electronics, Dokuz Eylül University, 1995.
Graduation Project: Computer Aided Simulation of Remote-Control Signals.

Projects as principal investigator

- Fiber Optic Sensor Assisted Safe Industrial Microwave Heating System,
IRASME, (Tübitak-1071), 2021-2024
- Development of a Phase-OTDR interrogator,
TUBITAK-2219 International Research Fellowship Programme,
BIDEB-2219-1059B191600612, (2017)
- Design of a fiber optic current sensor,
Scientific Research Project (2020-IYTE-0058), May 2020-2022
- Development of a simulation tool for vibration sensors based on Phase-OTDR interrogator,
Scientific Research Project (2019-IYTE-0316), April 2019-May2020
- Development of an intrusion sensor based on Phase-OTDR,
Scientific Research Project (2017-IYTE-77), December 2017-January 2018
- Design of a novel optical sensor interrogation method using Fiber Cavity Ring-Down (FCRD) technology and Optical Time Domain Reflectometer,
Scientific Research Project (2016-IYTE-50), 2016- 2017
- Development of an energy-efficiency and cost optimisation tool for the physical-layer monitoring of optical access networks,
Scientific Research Project (2013-IYTE-02), October 2013-September 2015
- Development of a fiber-optic traffic sensor for intelligent transportation systems, 1049.TGSD.2014,
Seed-stage funding program provided by Science, Industry and Technology Ministry of Turkey, (Amount of funding: 99.000 TL), April 2014-August 2015

- Novel sensing method using optical frequency-domain reflectometer and fiber Bragg gratings for strain monitoring of composite materials (SENSOREF),
EU 7th Framework, Marie-Curie International Reintegration Grants, Call ID: FP7-PEOPLE-2013-CIG, Proposal No: 618611, February 2013.
Passed threshold with no funding. Total Score: 84.4/100
- LOCOTRAC: Low Cost Train Automatic Control, Development of innovative concepts for low cost intelligent traffic management and transportation systems based on sensor and telecommunication technologies,
(postdoctoral researcher), November 2011-March 2012, Belgium

Teaching

- Graduate level courses:
 - EE513 (Fiber Optic Sensors),
 - EE511 (Optical Fiber Communication Systems),
 - PHOT505 (Applied Photonics).
- Undergraduate electrical engineering courses:
 - EE411 (Fundamentals of Photonics),
 - EE412 (Optical Communications),
 - EE313 (Electronics-II),
 - EE221 (Concepts of Modern Physics),
 - EE272 (Electronic Circuits).
- Visiting Professor, May 2013 and September 2018, ERASMUS Staff Mobility for Teaching Assignments Programme, Electromagnetism and Telecommunication Department University of Mons (FPMs), Mons, Belgium

Graduate projects supervised

As principal (and only) advisor:

- Samil SIRIN Investigation of phase-sensitive time domain reflectometry for optical fibre sensing, IYTE, September **2019-2022**.
- Ertunga Burak KOCAL Development of a Simulation Tool for FBG-based Phase-OTDR Vibration Sensors, IYTE, September **2018-2021**.
- Melike DEMIREL Framework for evaluating security and maintenance issues in optical fiber access networks: case for Turkey, IYTE, December **2018-ongoing** (suspended for the current semester).
- Cansu IDE. Analysis and implementation of long period fiber grating and Fresnel reflection-based sensors for refractive index measurement of liquids, IYTE, July **2017**.
- Anil YILMAZ. Analysis and implementation of optical fiber sensors for process monitoring of composite materials, IYTE, December **2016**.
- Deniz OZCAN PALA. Analysis and modeling of a novel approach for the interrogation unit of fiber Bragg gratings sensors using optical frequency- domain reflectometry techniques, IYTE, July **2014**.

As co-adviser:

- Gizem SOYLU. Exploiting second harmonic generation for microelectronics interface characterization, IYTE, July **2016**
- Hürriyet Yüce ÇAKIR, Potential applications of inorganic optical elements and polymeric systems, IYTE, June **2022**

List of Publications

Papers in refereed journals

- (Arxiv)
C.E. Kayan, K. Yüksel, A. Gumus ‘A Novel Approach For Analysis of Distributed Acoustic Sensing System Based on Deep Transfer Learning’, *arXiv preprint arXiv:2206.12484* (**2022**).
- (SCI-Exp)
K. Yüksel D. Kinet, K. Chah, C Caucheteur ‘Scientific Applications of Distributed Acoustic Sensing: State-of-the-Art Review and Perspective’, *Sensors*, 22, 3, 1033, 10.3390/s22031033 (**2022**).

- (SCI-Exp)
K. Yüksel D. Kinet, K. Chah, C Caucheteur ‘Implementation of a Mobile Platform Based on Fiber Bragg Grating Sensors for Automotive Traffic Monitoring’, *Sensors*, 20, 6, (2020).
- (SCI-Exp)
K. Chah, K. Yüksel, D. Kinet, N S. Yazd, P Megret, C. Caucheteur ‘Fiber Bragg grating regeneration at 450 C for improved high temperature sensing’, *Optics Letters*, 44, 16, (2019).
- (corresponding author, SCI-Exp)
K. Yüksel D. Kinet, V. Moeyaert, G. Kouroussis, C. Caucheteur ‘Railway monitoring system using optical fiber grating accelerometers’, *Smart Materials and Structures*, 27, 10, 105033 (9p), (2018).
- (corresponding author, SCI-Exp)
K. Yüksel A. Yilmaz ‘Analysis of a novel sensor interrogation technique based on fiber cavity ring-down (CRD) loop and OTDR’, *Optical Fiber Technology*, 43, 57-61, (2018).
- (corresponding author, ULAKBIM)
K. Yüksel J. Jason, M. Wuilpart ‘Development of a phase-OTDR interrogator based on coherent detection scheme’, *Uludag University Journal of The Faculty of Engineering*, 23 (3), 355-370, (2018).
- (corresponding author, ULAKBIM)
C. Ide, K. Yüksel, ‘Implementation of Long-Period Fiber Gratings for Refractive Index Measurement of Liquids’, *Balkan Journal of Electrical and Computer Engineering*, 19 (4), 815-830, (2018).
- (corresponding author, ULAKBIM)
C. Ide, K. Yüksel, ‘Experimental Investigation of Refractive Index Measurement of Common Solvents and Aqueous Solutions in the Infrared Wavelengths’, *Eskisehir Technical University Journal of Science and Technology A- Applied Sciences and Engineering*, 6 (3), 14-19, (2018).
- (corresponding author, ULAKBIM)
E. Vardarli, K. Yüksel, ‘Phase noise compensation in frequency modulated continuous wave (FMCW) measurement systems’, *Journal of Polytechnic*, 21 (4), 777-784, (2018).
- (corresponding author, SCI-Exp)
K. Yüksel, ‘Optical fiber sensor system for remote and multi-point refractive index measurement’, *Sensors and Actuators A: Physical*, 250, 29-34, (2016).
- (corresponding author, SCI-Exp)
K. Yüksel, D. Ozcan, ‘Analytical investigation of a novel interrogation approach of fiber Bragg grating sensors using optical frequency domain reflectometry’, *Optics and Lasers in Engineering*, 81, 119-124, (2016).
- (corresponding author, SCI-Exp)

- K. Yüksel, P. Mégret, M. Wuilpart, ‘Infrared radiation detector interrogated by optical frequency-domain reflectometer’, *Optics and Lasers in Engineering*, 50 (3), 308-311, (2012).
- (corresponding author, SCI)
 - K. Yüksel, P. Mégret, M. Wuilpart, ‘A quasi-distributed temperature sensor interrogated by optical frequency-domain reflectometer’, *Measurement Science and Technology*, 22, 115204, (2011).
 - (corresponding author, SCI)
 - K. Yüksel, P. Mégret, V. Moeyaert, M. Wuilpart, ‘Complete analysis of multi-reflection and spectral-shadowing crosstalks in a quasi-distributed fibre sensor interrogated by OFDR’, *IEEE Sensors Journal*, 99, doi: 10.1109/JSEN.2011.2167142, (2012).
 - (corresponding author, SCI)
 - K. Yüksel, M. Wuilpart, V. Moeyaert, P. Mégret, ‘Novel monitoring technique for passive optical networks based on optical frequency domain reflectometry and fiber Bragg gratings’, *IEEE/OSA J. Opt. Commun. Netw.* 2, 463-468 (2010)
 - (corresponding author, SCI)
 - K. Yüksel, M. Wuilpart, P. Mégret, ‘Analysis and suppression of nonlinear frequency modulation in an optical frequency-domain reflectometer’, *Optics Express* 17, No. 7, 5845-5851, (2009)
 - (corresponding author, SCI)
 - K. Yüksel, S. Dupont, D. Hamoir, J.-C. Froidure, ‘FTTx automated test solution: requirements and experimental implementation’, *Electronics Letters* 41, No.9, 546-547, (2005)

Patents

- K. Yüksel, M. Wuilpart, P. Mégret, Monitoring techniques for passive optical networks, PCT/EP2011/052776, filing date 25 February 2011.
- K. Yüksel, S. Dupont, D. Hamoir, L. Robette, F. Foucart, Device and method for real-time optical network monitoring, EP 1578039 A1, European Patent Office, 21.09.2005.

Books and inbooks

- Optical Transmission: the FP7 BONE project experience, 2011 Contribution to chapter 2: Signal processing, management and monitoring in transmission networks, (C. Caucheteur, V. Moeyaert, K. Yüksel) Editors: A. Teixeira, G.M. Tosi Belevfi, Springer, ISBN 978-94-007-1766-4.

Papers in peer-reviewed conference proceedings

- S. Sirin, K. Yüksel. Distributed current sensing via optical reflectometry, 2nd International Conference on Light and Light-based Technologies, 26-28 May, Ankara, Türkiye, **2021**.
- K. Yüksel, J. Jason, E.B. Kocal, M. L-A. Sainz, M. Wuilpart. An overview of the recent advances in FBG-assisted phase-sensitive OTDR technique and its applications, 22nd International Conference on Transparent Optical Networks, 19-23 July, Bari, Italy (invited), **2020**.
- E.B. Kocal, K. Yüksel, M. Wuilpart. Combined Effect of Multi-Reflection and Spectral Shadowing Crosstalk in Phase-OTDR System Using Fiber Bragg Grating, 26th International Conference on Optical Fiber Sensors, OFS'20, Alexandria, Virginia, USA, (accepted, poster), **2020**.
- K Chah, D Kinet, K. Yüksel, C Caucheteur. Fs FBGs as probes to monitor thermal regeneration mechanisms, Seventh European Workshop on Optical Fibre Sensors Proc. SPIE 11199, 1119936, **2019**.
- S. Sirin, K. Yüksel. Development of a simulation tool for vibration sensors based on Phase-OTDR interrogator, Conference on Innovations in Intelligent Systems and Applications (ASYU 2019), 31 October- 2 November, Izmir, Turkey, **2019**.
- K. Yüksel. Rayleigh-based optical reflectometry techniques for distributed sensing applications, ICENTE 2018, October 26-28, Konya, Turkey, **2018**.
- K. Yüksel, Johan Jason, Veronique Miguel Soto, Amo M Lopez, P. Megret, and M. Wuilpart. Performance Evaluation of Phase-OTDR Sensing System Based on Weak Fiber Bragg Grating Array IEEE Photonics Society, Annual Symposium, November 15-16, Brussels, Belgium, **2018**.
- K. Yüksel, D. Kinet, V. Moeyaert, G. Kouroussis, C. Caucheteur. A Trackside Sensor System for Train Axle Counting by Fiber Bragg Grating Accelerometer 26th International Conference on Optical Fibre Sensors (OFS-26), September, 24 - 28, Lausanne, Switzerland, **2018 (poster)**.
- K. Yüksel, A.G. Vila, D. Kinet, C. Caucheteur. Experimental Considerations in the Development of Regenerated Fiber Bragg Grating Sensors, IEEE 26th Signal Processing and Communications Applications Conference (SIU), May 2-4, Izmir, Turkey, **2018**.
- J. Jason, K. Yüksel, M. Wuilpart. Laboratory evaluation of a phase-OTDR setup for railway monitoring applications IEEE Photonics Society, Annual Symposium, November 27-28, Delft, The Netherlands, **2017**.
- A. Yilmaz, O. Kartav, K. Yüksel. Design and analysis of a novel fiber optic sensing system for process monitoring of composite materials IEEE 25th Signal Processing and Communications Applications Conference (SIU), May 16-18, Antalya, Turkey, **2017**.

- C.İde, K. Yüksel, A comparative study of optical fiber sensors for refractive index measurement IEEE Electrical, Electronics and Biomedical Engineering (ELECO), National Conference, 725-730, Bursa, Turkey, **2016**. (poster)
- C.İde, K. Yüksel Modelling aspects of refractive index sensitivity of long period Bragg gratings 17th National Optics, Electro-optics and Photonics Workshop, p.15-16, Ankara, Turkey, **2015**. (poster)
- D. Ozcan, K. Yüksel Frekans bölgesinde optik yansima teknikleri kullanarak yeni bir sensor yaklasiminin analiz ve uygulaması 15th National Optics, Electro-optics and Photonics Workshop, Ankara, Turkey, **2013**. (poster)
- D. Kinet, K. Yüksel, C. Caucheteur, D. Garray, M. Wuilpart, F. Narbonneau, P. Mégret Structural health monitoring of composite materials with fibre Bragg gratings interrogated by Optical Frequency Domain Reflectometer, 15th European Conference on Composite Materials (ECCM 2012), June 24-28, Venice, Italy, **2012**.
- K. Yüksel, C. Caucheteur, J-M. Renoirt, P. Mégret, M. Debliquy, M. Wuilpart, Infrared radiation detector interrogated by Optical Frequency Domain Reflectometer, Advanced Photonics 2010 Congress, Optical Sensors, June 12-16, Toronto, Canada, 2011.
- M. Wuilpart, K. Yüksel, P. Mégret, Optical reflectometry in the frequency domain for the interrogation of fibre Bragg gratings, invited, Proc. 17th International Conference on Applied Physics of Condensed Matter, pp. 30-35, 22-24 June, high Tatras, Slovakia, 2011.
- K. Yüksel, V. Moeyaert, P. Mégret, and M. Wuilpart, Analysis of spectral-shadowing crosstalk in a quasi-distributed fibre sensor interrogated by Optical Frequency-Domain Reflectometer, Proc. SPIE 8083, 808311, Optical Metrology, 23-26 May, Munich (G), 2011.
- J. Montalvo, K. Yüksel, D. Sanchez Montero, M. Wuilpart, P. Mégret, and C. Vazquez, New Radio-Frequency Techniques for Individual Drop Fibre Monitoring and Temperature Sensing in PONs, 15th International Conference on Optical Network Design and Modeling, (ONDM 2011), pp.1-5, Bologne (IT), 8/02-10/02, 2011.
- K. Yüksel, M. Wuilpart, V. Moeyaert, P. Mégret, Original monitoring technique for passive optical networks combining fiber Bragg gratings and wavelength swept light source, invited paper Th.A.2.2, International Conference on Transparent Optical Networks (ICTON 2010), Munich (G), 27/06-01/07, 2010.
- K. Yüksel, M. Wuilpart, P. Mégret, Analysis of multi - reflection crosstalk for a quasi-distributed fiber sensor interrogated by Coherent-Optical Frequency Domain Reflectometer, paper JThA5, OSA Technical Digest (CD), Optical Sensors 2010, Karlsruhe (G), 21/06-24/06, 2010.

- K. Yüksel, M. Wuilpart, P. Mégret, Multi-reflection Crosstalk Analysis for a Quasi-distributed Fiber Sensor Combining Fibre Bragg Gratings (FBG) and Optical Frequency-domain Reflectometry (OFDR), IEEE Photonics Society Annual Workshop, Ghent (B), May, 2010. (Best presentation award, second place.)
- K. Yüksel, M. Wuilpart, V. Moeyaert, P. Mégret, Optical Frequency- Domain Reflectometry: a review, Proc. International Conference on Transparent Optical Networks (ICTON 2009), invited, Tu.C2.5, Ponta- Delgada-Azores (Portugal), 28/06-02/07, 2009.
- K. Yüksel, M. Wuilpart, P. Mégret, Spatial resolution enhancement in coherent optical frequency domain reflectometer by nonlinear frequency sweep-suppression, Proc. International Conference on Optical Measurement Techniques for Structures and Systems (OPTIMESS), Antwerp (Belgium), pp. 411-417, 25-26/05, 2009.
- K. Yüksel, M. Wuilpart, P. Mégret, Spatial resolution enhancement in coherent optical frequency domain reflectometer by suppression of nonlinear frequency modulation, IEEE Photonics Society 13th Annual Workshop, Eindhoven (NL), 11/09, 2009
- K. Yüksel, M. Wuilpart, V. Moeyaert, P. Mégret, Optical Layer Monitoring in Passive Optical Networks (PONs): a review, Proc. International Conference on Transparent Optical Networks (ICTON 2008), invited Tu.B1.1, Athens (Gr), 22-26/06, 2008.
- K. Yüksel, M. Wuilpart, P. Mégret, Experimental investigations of coherent optical-frequency domain reflectometry, IEEE Laser and Electro- Optics Society Symposium, pp.31-34, Enschede (NL), 27-28/12, 2008.
- K. Yüksel, M. Wuilpart, P. Mégret, Coherent Optical Frequency Domain Reflectometry as a diagnostic tool, IEEE Laser and Electro-Optics Society Symposium-Benelux Chapter Annual Workshop, Brussels (B), pp.7-8, 30/05, 2008.
- K. Yüksel, M. Wuilpart, P. Mégret, Optical-frequency domain reflectometry: roadmap for high-resolution distributed measurements, Proc. IEEE Laser and Electro-Optics Society Symposium - Benelux Chapter, pp. 231- 234, Brussels (B), 17/12-18/12, 2007.
- M. Wuilpart, A. Grillet, K. Yüksel, D. Giannone, G. Ravet, P. Mégret, Dynamics enhancement of OTDR-based monitoring systems for passive optical networks, Proc. IEEE Laser and Electro-Optics Society Symposium - Benelux Chapter, pp. 167-170, Brussels (B), 17-18/12, 2007.
- K. Yüksel, S. Letheux, A. Grillet, M. Wuilpart, D. Giannone, J. Hancq, G. Ravet, P. Mégret, Centralised Optical Monitoring of Tree-structured Passive Optical Networks using a Raman-assisted OTDR, Proc. International

Conference on Transparent Optical Networks (ICTON 2007), pp. 175-177, Rome (Italy), 01-05/07, 2007.

- K. Yüksel, S. Dupont, L. Robette, D. Hamoir, J.-C. Froidure, OTDR- based fault surveillance method for passive tree-structured optical networks, IEE XVth International Symposium on Services and Local Access (ISSLS 2004), paper on CD ROM, Edinburgh (UK), 04/03-04/03, 2004.
- L. Robette, K. Yüksel, V. Moeyaert, D. Hamoir, La maintenance de reseaux optiques passifs sur base de la technologie de la reflectometrie optique dans le domaine temporel, Journées Nationales d'Optique Guidée, pp. 351-353, Valence (F), 12/11-14/11, 2003.
- K. Yüksel, L. Robette, V. Moeyaert, J.-C. Froidure, OTDR-based monitoring method for passive optical networks, Network and Optical Communications (NOC), pp. 255-261, Vienna (AU), 01/07-03/07, 2003.
- G. Kahraman and K. Yüksel, Performance Analysis of Optically Pre-Amplified Receivers in Digital Optical Communication Systems, Proceedings of 8th National Electrical Electronics and Computer Engineering Conference, pp. 509-513, Gaziantep, Turkey, September 6-12, 1999.

Other oral presentations

- Structural Health Monitoring of Composite Materials by Optical Reflectometry Techniques, 30. Sensor ve Elektronik Sistemler Teknoloji Paneli, Milli Savunma Bakanligi, ARGE ve Teknik Daire Baskanligi, Ankara (TR), 05/12, 2013.
- Coherent Optical Frequency Domain Reflectometer (C-OFDR) as an interrogating tool for the quasi-distributed fiber sensors, Journée Scientifique de l'Ecole Doctorale METAMORPHOSE, Brussels (B), 29/01, 2010.
- Experimental investigations of Coherent-OFDR, Journée Scientifique de l'Ecole Doctorale METAMORPHOSE, Mons (B), 30/01, 2009.
- Optical-frequency domain reflectometry: roadmap for high-resolution distributed measurements, BONE Summer School 2008, Mons (B), 15/10-17/10, 2008.
- Theoretical and Experimental investigations of Incoherent-OFDR, Journée Scientifique de l'Ecole Doctorale METAMORPHOSE, Liege (B), 30/01, 2008.
- Dynamics enhancement of OTDR-based monitoring systems for Passive Optical Networks, COST 299 meeting, Berlin (G), 03/02-08/02, 2008.
- Centralised Optical Monitoring of Tree-structured Passive Optical Networks using a Raman-assisted OTDR, e-Photon/One+ Summer School 2007, Brest (F), 16/07-20/07, 2007.
- G. Kahraman and K. Yüksel, Sensitivity of an EDFA Pre-Amplified Receiver Accounting for the Non-Linear Photon Amplification Statistics and ISI, IEEE OECC 2000 Fifth Optoelectronic and Communications Conference, poster no 1027, 12P-19, Japan, 11/07, 2000.

Tutorial:

A half-day seminar entitled '*FTTH Technologies*' was periodically given to industrial partners (e.g. Belgacom) twice a year, between 2005 and 2009.

Reviewer for the following journals:

IEEE Sensor Letters (since 2017), IEEE Journal of Lightwave Tech. (since 2016), Optics Express (since 2011), Optics Letters (since 2015), Optics Communication (since 2014), IEEE Photonics Technology Letters, IEEE Sensors Journal (since 2012), Photonic Network Communications, IEEE Photonics Journal (since 2013). Optical Switching and Networking (since 2013), Optics and Lasers in Engineering (since 2013), Turkish journal of electrical engineering and computer sciences (since 2013).