Barış Yüksekkaya, Ph.D.

EDUCATION				
2009-2016	Ph.D.	Hacettepe University, Ankara, Turkey Department of Electrical & Electronics Eng.		
2006-2009	M.Sc.	Hacettepe University, Ankara, Turkey Department of Electrical & Electronics Eng.		
2002-2006	B.Sc.	Hacettepe University, Ankara, Turkey Department of Electrical & Electronics Eng.		
WORK EXPERIENCE				
July 2019 - 	Assistant Professor	Hacettepe University, Department of Electrical and Electronics Engineering, Ankara, Turkey		
		Supervising senior and graduate students. Full time lecturer for ELE109 Discrete Structures and Algorithms, ELE293 Electric Circuits, ELE450 Fundamentals of Wireless Communications, ELE670/770 Statistical Signal Processing.		
December 2006 – July 2019	Teaching & Research Assistant	Hacettepe University, Department of Electrical and Electronics Engineering, Ankara, Turkey Full time teaching assistantship for laboratories.		
September 2016 - May 2017	PostDoc Researcher	Imperial College London, Department of Electrical and Electronics Engineering, London, UK Full time researcher. Working with Prof. Dr. Athanassios Manikas and his research team about 5G mm-wave communication systems with a focus on array processing techniques. Funded by Hacettepe University Scientific Research Projects Coordination Unit.		
September 2013 - April 2014	Researcher	Carleton University, Department of Systems and Computer Engineering, Ottawa, Canada Full time researcher. Worked with Prof. Dr. Halim Yanikomeroglu and his research team for 7 months about 4G and next generation communication systems. Funded by TUBITAK (The Scientific and Technological Research Council of Turkey), 2214-A - International doctoral research scholarship program.		

CURRENT RESEARCH

- Optimization Theory for Communications
- Machine Learning for Communications
- Massive MIMO and millimeter Wave
- Non-Terrestrial (Aerial) Communications
- Communication in interference limited and cooperative networks.

RESEARCH EXPERIENCE

Funded Projects: Finished:

- TUBITAK (The Scientific and Technological Research Council of Turkey), Turkey, 119E197, (\$54,000.00), (Project Manager) "Interference Aware and Fair Cell Association, User Scheduling, and Resource Allocation in Next Generation Ultra Dense Heterogeneous Communication Networks", November 2019 January 2022
- Hacettepe University Scientific Research Projects Coordination Unit, Turkey, FBI-2016-9815 (\$9,600.00), (Project Manager, **PostDoc Research**) "Antenna Arrays and Array Processing Techniques in Next Generation 5G mm-Wave Communication Systems", April 2016 – December 2017
- TUBITAK (The Scientific and Technological Research Council of Turkey), Turkey, 112E024 (\$187,000.00), (Student Researcher, **Ph.D. Research**) "Dynamic Radio Resource Management and Allocation for Next Generation Wireless Communications Systems", September 2012 October 2015
- TUBITAK (The Scientific and Technological Research Council of Turkey), Turkey, Technopreneurship Program, 147.TGSD.2011, (\$65,000.00) (Project Manager), "Automatic Sperm Analyzer (OSA)", April 2011 – May 2012
- TUBITAK (The Scientific and Technological Research Council of Turkey), Turkey, 108E208, (Student Researcher) "OFDM-Based Resource Allocation in Cooperative Wireless Communications", January 2009 August 2011
- TUBITAK (The Scientific and Technological Research Council of Turkey), Turkey, 107E056 (\$95,000.00) (Student Researcher, M.Sc. Research) "Channel Shortening Equaliser Design and Resource Allocation Algorithm Development for MCM Based Communication Systems", July 2007 July 2010

Consultant Duties in Industrial Projects:

- Developing an Ad-Hoc Network for Swarm Systems (2022 2023)
- The End to End Domestic and National 5G Communication Network Project (2020 2021)

Senior Project:

• Mobile (GSM), Internet and Voice Controlled Wireless Home Automation System

SKILLS		
Personal Characteristics	Ability to work with a group and also independently, creative and analytical thinking, to establish good relations with people, ability to produce solutions.	
Professional Skills	Interference Management System Level Simulations MIMO OMA – NOMA Procedures PHY and MAC Layers in LTE and NR Optimization Theory	
Languages	Turkish - Native English - TOEFL IBT 108/120	
Programming Languages	MATLAB (Expert) C++ (Intermediate).	
Application Programmes	Matlab GUI Microsoft Office Microsoft Project Latex.	

PUBLICATIONS

(A. Journal Paper - B. Conference Proceeding)

- A1. Yuksekkaya, B., "Joint Uplink-Downlink User-Cell Association for Ultra-Dense NOMA Networks", Internet of Things, Volume 27, 2024
- **A2. Yuksekkaya, B.**, Demir, U., Bulu, G., "Interference Aware Two-Tier Fair User-Cell Association", **AEU International Journal of Electronics and Communications**, Volume 177, 2024
- **A3. Yuksekkaya**, **B.**, Toker, C., "Interference-aware resource allocation for multi-tier uplink NOMA under feedback constraints", **Elsevier Physical Communication**, Volume 35, 2019.
- A4. Yuksekkaya, B., Toker, C., "Power and Interference Regulated Water-Filling for Multi-Tier Multi-Carrier Interference Aware Uplink", IEEE Wireless Communication Letters, Volume 7, Issue 4, Aug 2018 Page(s): 494 – 497.
- A5. Yuksekkaya, B., "Indoor 3D Channel Modelling for Massive MIMO in the 60 GHz mm-Wave Band", Firat University Journal of Engineering Science, Volume 30, Issue 2, 2018 Page(s): 175 – 184
- A6. Yuksekkaya, B., Toker, C., "Joint transceiver FIR filter design for multiuser MIMO channel shortening equalization and full equalization using channel duality", Turkish Journal of Electrical Engineering & Computer Sciences, Volume 25, Jan 2017 Page(s): 4077 – 4090.
- A7. Yuksekkaya, B., "Indoor Channel Modelling for SISO and Massive SIMO in the 60 GHz mm-Wave Band", Elektronika ir Elektrotechnika, Volume 23, Issue 4, August 2017.
- A8. Yüksel, M., Yuksekkaya, B., "Minimum Outage Probability for the Relay Channel under Individual Power Constraints", IEEE Communication Letters, Volume 16, Issue 7, July 2012 Page(s): 982 – 985

- **A9.** Yuksekkaya, B., Kayalar, A.A., Tosun, M.B., Özcan, M.K., Alkar, A.Z., "A GSM, internet and speech controlled wireless interactive home automation system", IEEE Transactions on Consumer Electronics, Volume 52, Issue 3, August 2006 Page(s): 837-843
- **B1. Yuksekkaya, B.**, Bulu, G., Senturk, A., Uyanik, I., "Localization of Weakly Electric Fish Using Electric Field Recordings and ANNs", **FENS Forum 2024**, 26-29 June 2024
- B2. Dokumacı, U. B., Yuksekkaya, B., "Analysis of Global Positioning System Spoofing Methods", IEEE Signal Processing and Communications Applications Conference (SIU-2024), 15-18 May 2024
- B3. Akbunar, Ö., Yuksekkaya, B., "Radar Intrapulse Modulation Classification with Deep Learning", IEEE Signal Processing and Communications Applications Conference (SIU-2023), 05-08 July 2023
- **B4.** Bozyel, I., Endes, A., Akkoca, A., **Yuksekkaya, B.**, Gokcen, D., "AI-based Liquid Classification with Laser-Induced Graphene Flex-Sensor", **IEEE International Conference on Flexible and Printable Sensors and Systems (FLEPS)**, 10-13 July 2022
- **B5.** Endes, A., **Yuksekkaya, B.**, "5G Network Slicing with Multi-Purpose AI models", accepted to **IEEE International Black Sea Conference on Communications and Networking** (BlackSeaCom-2022), 06-09 June 2022
- B6. Endes, A., Yuksekkaya, B., "5G Network Slicing using Machine Learning Techniques", accepted to IEEE Signal Processing and Communications Applications Conference (SIU-2022), 15-18 May 2022
- **B7.** Ucas, H. R., Yuksekkaya, B., "Machine learning assisted cell association for two-tier communication networks", IEEE Signal Processing and Communications Applications Conference (SIU-2021), 09-11 June 2021
- B8. Demir, U., Yuksekkaya, B., Toker, C., "Interference aware optimal resource allocation on V2X networks", IEEE Signal Processing and Communications Applications Conference (SIU-2019), 24-26 April 2019
- **B9.** Yuksekkaya, B., Inaltekin, H., Toker, C., "Power control for two-tier multi-carrier MAC under interference constraints", IEEE Signal Processing and Communications Applications Conference (SIU-2016), 16-19 May 2016
- B10. Yuksekkaya, B., Demir, U., Inaltekin, H., Toker, C., "Power control for two-tier uplink under feedback and interference constraints", IEEE Signal Processing and Communications Applications Conference (SIU-2016), 16-19 May 2016
- B11.Haliloglu, O., Toker, C., Bulu, G., Yuksekkaya, B., Yanikomeroglu, H., "Energy efficient power control and radio resource management in multi-connectivity framework", IEEE Signal Processing and Communications Applications Conference (SIU-2016), 16-19 May 2016
- B12. Yuksekkaya, B., Inaltekin, H., Toker, C., Yanikomeroglu, H., "Near-Optimum Power Control for Two-Tier SIMO Uplink Under Power and Interference Constraints", IEEE 16. International Workshop on Signal Processing Advances in Wireless Communications (SPAWC-2015), June 28 July 01 2015

- **B13. Yuksekkaya, B.**, Inaltekin, H., Toker, C., Yanikomeroglu, H., "Power Control for Two-Tier SIMO-MIMO Uplink Under Interference Constraints", **IEEE Signal Processing and Communications Applications Conference (SIU-2015)**, 16-19 May 2015
- B14.Catalbas, C., Yuksekkaya, B., "Country of Origin Estimation From Composite Faces using Kernel Principal Compenent Analysis", IEEE Signal Processing and Communications Applications Conference (SIU-2014), 23-25 April 2014
- B15.Yuksekkaya, B., Inaltekin, H., Toker, C., "Optimum Uplink Power Control Under Power and Interference Constraints", IEEE 78nd Vehicular Technology Conference Fall (VTC 2013-Fall), 2013, 2-5 September 2013
- B16.Yuksekkaya, B., Toker, C., "A General Joint Transceiver Design for Multiuser MIMO Channel Equalization", IEEE 72nd Vehicular Technology Conference Fall (VTC 2010-Fall), 2010, 6-9 September 2010, Page(s): 1 – 5
- **B17.Yuksekkaya, B.**, Toker, C., "Joint Transceiver Design for Multiuser MIMO Channel Equalization", **IEEE Signal Processing and Communications Applications Conference** (SIU-2010), 22-24 April 2010, Page(s): 316 319
- B18. Yuksekkaya, B., Toker, C., "A General Framework for Joint Transceiver Design for Multiuser MIMO Channel Shortening Equalization", IEEE/SP 15th Workshop on Statistical Signal Processing, 2009, SSP '09, Aug. - Sep. 2009 Page(s): 105 – 108

AWARDS

- Ranked second in the 3th Senior Design Project Competition organised by the Faculty of Engineering, Hacettepe University, Ankara, Turkey. Project title: A GSM, internet and speech controlled wireless interactive home automation system.
- Ranked first in the Solar Car Competition organised by the Department of Electrical and Electronics Engineering, Hacettepe University, Ankara, Turkey.

REFERENCES			
Prof. Dr. Halim Yanıkömeroğlu Faculty Member, Project Advisor	Carleton University Dep. of Systems and Computer Engineering - K1S 5B6 Tel: +1 613 520-5734 e-mail: halim {at} sce.carleton.ca		
Prof. Dr. Athanassios Manikas Faculty Member, PostDoc Mentor	Imperial College London Dep. of Electrical and Electronics Engineering - SW7 2AZ Tel: +44 (0)20 7594 6266 e- mail: a.manikas {at} imperial.ac.uk		
Prof. Dr. Cenk Toker Faculty member, Thesis Supervisor	Hacettepe University Dep. of Electrical and Electronics Engineering - 06800 Tel: +90 312 7807006 e- mail: cenk.toker {at} ee.hacettepe.edu.tr		

• Ranked second in TUBITAK Olympic Games on Physics between Highschool Students.