

## **Asst. Prof. GÖKHAN MUZAFFER GÜVENSEN**

### **Personal Information**

**Office Phone:** [+90 312 210 2332](tel:+903122102332)

**Email:** [guvensen@metu.edu.tr](mailto:guvensen@metu.edu.tr)

**Web:** <https://avesis.metu.edu.tr/guvensen>

**Address:** [guvensen@metu.edu.tr](mailto:guvensen@metu.edu.tr)

### **International Researcher IDs**

ScholarID: S7fj7qMAAAAJ

ORCID: 0000-0002-4406-1249

Publons / Web Of Science ResearcherID: ABA-4208-2020

ScopusID: 24724222900

Yoksis Researcher ID: 164832

### **Biography**

Dr. Gokhan M. Guvensen received his BS, MS, and Ph.D. degrees in electrical and electronics engineering from the Middle East Technical University (METU), Ankara, Turkey in 2006, 2009 and 2014, respectively. He worked as a postdoctoral fellow in the Center for Pervasive Communications and Computing (CPCC) in the University of California, Irvine (UCI), USA between 2015 and 2016, and he is currently a collaborator of the research group in UCI. In 2017, he joined the Electrical and Electronics Engineering Department at METU, where he is now an Assistant Professor.

His research interests include the design of digital communication systems and statistical signal processing with a particular focus on modulation theory, next-generation mobile communication techniques, iterative detection and equalization techniques, information theory, and radar signal processing.

### **Foreign Languages**

English, C1 Advanced

### **Research Areas**

Engineering and Technology

### **Academic Titles / Tasks**

Assistant Professor, Middle East Technical University, Faculty of Engineering, Department of Electrical and Electronics Engineering, 2017 - Continues

### **Advising Theses**

Güvensen G. M., Beam-squint aware channel estimation for dual-wideband RIS-aided massive MIMO, Postgraduate,

O.YILMAZ(Student), 2023

Güvensen G. M., Nonlinear signal processing for efficient physical layer design in 5G beyond, Doctorate,

M.BABEK(Student), 2023

Güvensen G. M., Signal processing and beamforming techniques for cell free MM-wave massive MIMO systems,

Postgraduate, M.KARATAŞ(Student), 2023

Güvensen G. M., Oversampled distortion-aware precoding with efficient oob radiation control for quantized massive mimo and performance analysis, Postgraduate, Y.KARABACAĞOĞLU(Student), 2023

Güvensen G. M., AN INTERFERENCE AND BEAM SQUINT AWARE HYBRID MASSIVE MIMO FOR SPATIAL WIDEBAND BDMA CHANNELS, Postgraduate, H.ÖZEN(Student), 2022

Güvensen G. M., An experimental and theoretical study on the utilization of observation channel for transmitter noise cancellation in in-band full-duplex radios, Postgraduate, A.KAYA(Student), 2022

Güvensen G. M., Efficient signal processing techniques for colocated massive MIMO RADCOM based on OFDM waveform, Postgraduate, S.GÜREŞ(Student), 2022

Güvensen G. M., Deep learning aided parametric channel covariance matrix estimation for millimeter wave hybrid massive mimo, Postgraduate, E.ÖZBAY(Student), 2021

Güvensen G. M., An efficient interference-aware constrained beamforming and receiver design for mm-wave hybrid massive MIMO with non-orthogonal multiple access, Postgraduate, M.BAYRAKTAR(Student), 2021

Güvensen G. M., A REDUCED COMPLEXITY GENERIC NOMA MAP RECEIVER FOR WIDEBAND MIMO CHANNELS, Postgraduate, H.AYKUT(Student), 2020

Güvensen G. M., A novel receiver architecture for single carrier noma transmission in wideband sparse mimo channel, Postgraduate, B.HALİL(Student), 2019

Güvensen G. M., A reduced complexity hybrid precoding architecture and user grouping algorithms for downlink wideband massive MIMO channels, Postgraduate, E.KILCIÖĞLU(Student), 2019

Güvensen G. M., An efficient beam and channel acquisition via sparsity map and joint angle-delay power profile estimation for wideband massive MIMO systems, Postgraduate, A.OSMAN(Student), 2019

Güvensen G. M., A general framework on adaptive hybrid beamforming and channel acquisition for wideband mm-wave massive mimo systems, Postgraduate, A.KURT(Student), 2019

Güvensen G. M., A general framework for adaptive radar detection based on fast and slow-time preprocessing, Postgraduate, U.BERKAY(Student), 2019

Güvensen G. M., Parametric spectral estimation methods of clutter profile for adaptive radar detection and classification, Postgraduate, B.ERASLAN(Student), 2019

## Published journal articles indexed by SCI, SSCI, and AHCI

- I. **Reduced Complexity Correlation-Based Multi-Stream DPD for Hybrid Massive MIMO**  
Salman M. B., Ucuncu A. B., GÜVENSEN G. M.  
IEEE Communications Letters, vol.28, no.3, pp.677-681, 2024 (SCI-Expanded)
- II. **Interference and Beam Squint Aware TTD-aided Beamforming for Dual Wideband Massive MIMO**  
Ozen H., GÜVENSEN G. M.  
IEEE Wireless Communications Letters, vol.13, no.1, pp.64-68, 2024 (SCI-Expanded)
- III. **Low complexity nonlinear detection for multiuser hybrid MIMO systems and performance analysis**  
SALMAN M. B., GÜVENSEN G. M., ÇİLOĞLU T.  
Physical Communication, vol.60, 2023 (SCI-Expanded)
- IV. **Capacity Region of Asynchronous Multiple Access Channels With FTN**  
Zhang Z., YÜKSEL TURGUT A. M., GÜVENSEN G. M., Yanikomeroglu H.  
IEEE Communications Letters, vol.27, no.7, pp.1719-1723, 2023 (SCI-Expanded)
- V. **On the Effects of Range-Doppler Processing for Target Detection in OFDM-Based RadCom**  
SARAÇ U. B., GÜVENSEN G. M.  
IEEE Communications Letters, vol.27, no.7, pp.1864-1868, 2023 (SCI-Expanded)
- VI. **Robust Statistical Beamforming with Multi-Cluster Tracking for Time-Varying Massive MIMO**

- KURT A., GÜVENSEN G. M.  
IEEE Transactions on Vehicular Technology, vol.73, no.3, pp.3499-3515, 2023 (SCI-Expanded)
- VII. **An Adaptive-Iterative Nonlinear Interference Cancellation in Time-Varying Full-Duplex Channels**  
KURT A., SALMAN M. B., SARAÇ U. B., GÜVENSEN G. M.  
IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY, vol.72, no.2, pp.1862-1878, 2023 (SCI-Expanded)
- VIII. **Adaptation of Code-Domain NOMA to SC-FDE Based Overloaded mmWave Hybrid Massive MIMO**  
Bayraktar M., GÜVENSEN G. M.  
IEEE COMMUNICATIONS LETTERS, vol.26, no.3, pp.667-671, 2022 (SCI-Expanded)
- IX. **An Efficient QAM Detector via Nonlinear Post-Distortion Based on FDE Bank Under PA Impairments**  
SALMAN M. B., GÜVENSEN G. M.  
IEEE TRANSACTIONS ON COMMUNICATIONS, vol.69, no.10, pp.7108-7120, 2021 (SCI-Expanded)
- X. **A Reduced Complexity Ungerboeck Receiver for Quantized Wideband Massive SC-MIMO**  
ÜÇÜNCÜ A. B., GÜVENSEN G. M., YILMAZ A. Ö.  
IEEE Transactions on Communications, vol.69, no.7, pp.4921-4936, 2021 (SCI-Expanded)
- XI. **An Efficient Interference-Aware Constrained Massive MIMO Beamforming for mm-Wave JSDM**  
BAYRAKTAR M., GÜVENSEN G. M.  
IEEE ACCESS, vol.9, pp.87877-87897, 2021 (SCI-Expanded)
- XII. **A Reduced-State Ungerboeck Type MAP Receiver with Bidirectional Decision Feedback for M-ary Quasi Orthogonal Signaling**  
GÜVENSEN G. M., TANIK Y., YILMAZ A. Ö.  
IEEE TRANSACTIONS ON COMMUNICATIONS, vol.62, no.2, pp.552-566, 2014 (SCI-Expanded)
- XIII. **A General Framework for Optimum Iterative Blockwise Equalization of Single Carrier MIMO Systems and Asymptotic Performance Analysis**  
GÜVENSEN G. M., YILMAZ A. Ö.  
IEEE TRANSACTIONS ON COMMUNICATIONS, vol.61, no.2, pp.609-619, 2013 (SCI-Expanded)
- XIV. **An Upper Bound for Limited Rate Feedback MIMO Capacity**  
GÜVENSEN G. M., YILMAZ A. Ö.  
IEEE TRANSACTIONS ON WIRELESS COMMUNICATIONS, vol.8, no.6, pp.2748-2754, 2009 (SCI-Expanded)

### Refereed Congress / Symposium Publications in Proceedings

- I. **A Robust Quantized Beam-Squint and Interference Aware Statistical Beamforming for RIS-Aided Massive MIMO**  
Ozen H., GÜVENSEN G. M.  
2023 IEEE International Conference on Communications, ICC 2023, Rome, Italy, 28 May - 01 June 2023, vol.2023-May, pp.1307-1312
- II. **An Iterative Distortion-Aware Precoding for Quantized Upsampled Wideband Massive MIMO**  
Karabacakoğlu Y., Üçüncü A. B., GÜVENSEN G. M.  
2023 IEEE International Conference on Communications, ICC 2023, Rome, Italy, 28 May - 01 June 2023, vol.2023-May, pp.6498-6503
- III. **Ön-Kodlayıcı, A Quantized Precoder for MIMO Nicemleme Altında Çalışan bir MIMO**  
Karabacakoğlu Y., Üçüncü A. B., Karataş F., GÜVENSEN G. M.  
31st IEEE Conference on Signal Processing and Communications Applications, SIU 2023, İstanbul, Turkey, 5 - 08 July 2023
- IV. **Analytical Nonlinear Distortion Characterization for Frequency-Selective Massive MIMO Channels**  
Salman M. B., Björnson E., GÜVENSEN G. M., ÇİLOĞLU T.  
2023 IEEE International Conference on Communications, ICC 2023, Rome, Italy, 28 May - 01 June 2023, vol.2023-May, pp.6535-6540
- V. **An Efficient Constrained mm-Wave Hybrid Massive MIMO Beamforming for JSDM based NOMA**  
Bayraktar M., GÜVENSEN G. M.

- IEEE International Conference on Communications (ICC), ELECTR NETWORK, 14 - 23 June 2021
- VI. **An Efficient Iterative SIC for Full-Duplex SC-FDE Radio Under Hardware Impairments**  
KURT A., Salman M. B., Satana H. A., GÜVENSEN G. M.  
IEEE International Conference on Communications (ICC), ELECTR NETWORK, 14 - 23 June 2021
- VII. **Efficient User Grouping for Hybrid Beamforming in Single Carrier Wideband Massive MIMO Channels**  
Kilcioglu E., Guvensen G. M.  
IEEE 93rd Vehicular Technology Conference (VTC-Spring), ELECTR NETWORK, 25 - 28 April 2021
- VIII. **A Nonlinear Detector for Uplink SC-FDE mm-Wave Hybrid Massive MIMO under Hardware Impairments**  
Salman M. B., Guvensen G. M.  
IEEE International Conference on Communications (ICC), ELECTR NETWORK, 14 - 23 June 2021
- IX. **Spatial Correlation in Single-Carrier Massive MIMO Systems**  
Beigiparast N., GÜVENSEN G. M., Ayanoglu E.  
2020 Information Theory and Applications Workshop, ITA 2020, California, United States Of America, 2 - 07 February 2020
- X. **A Novel Neural Network Architecture for Radar Clutter Classification**  
Eraslan B., GÜVENSEN G. M., TANIK Y.  
18th IEEE World Symposium on Applied Machine Intelligence and Informatics (SAMI), Herlany, Slovakia, 23 - 25 January 2020, pp.263-268
- XI. **Turbo Parametric Spectral Estimation Method of Clutter Profile for Adaptive Radar Detection**  
Eraslan B., GÜVENSEN G. M., TANIK Y.  
IEEE 29th International Symposium on Industrial Electronics (ISIE), ELECTR NETWORK, 17 - 19 June 2020, pp.417-422
- XII. **An Efficient Spatial Channel Covariance Estimation via Joint Angle-Delay Power Profile in Hybrid Massive MIMO Systems**  
Kalayci A. O., GÜVENSEN G. M.  
IEEE International Conference on Communications (IEEE ICC) / Workshop on NOMA for 5G and Beyond, ELECTR NETWORK, 7 - 11 June 2020
- XIII. **A Circular Postamble Structure Enabling Low Complexity Equalization in Frequency Domain for Noncausal Channels: Cyclic Suffix**  
Kaya A., GÜVENSEN G. M.  
28th Signal Processing and Communications Applications Conference (SIU), ELECTR NETWORK, 5 - 07 October 2020
- XIV. **On the Effects of PA Nonlinearities for Hybrid Beamforming Based Wideband Massive MIMO Systems**  
Salman M. B., Guvensen G. M.  
IEEE International Conference on Communications (IEEE ICC) / Workshop on NOMA for 5G and Beyond, ELECTR NETWORK, 7 - 11 June 2020
- XV. **Investigation of Effects of PA Non-linearities on the Fully Digital Massive MIMO Systems**  
SALMAN M. B., GÜVENSEN G. M., ÇİLOĞLU T.  
28th Signal Processing and Communications Applications Conference (SIU), ELECTR NETWORK, 5 - 07 October 2020
- XVI. **A General Framework and Novel Transceiver Architecture based on Hybrid Beamforming for NOMA in Massive MIMO Channels**  
BAYRAKTAR M., GÜVENSEN G. M.  
IEEE International Conference on Communications (IEEE ICC) / Workshop on NOMA for 5G and Beyond, ELECTR NETWORK, 7 - 11 June 2020
- XVII. **An Adaptive Hybrid Beamforming Scheme for Time-Varying Wideband Massive MIMO Channels**  
Kurt A., Guvensen G. M.  
IEEE International Conference on Communications (IEEE ICC) / Workshop on NOMA for 5G and Beyond, ELECTR NETWORK, 7 - 11 June 2020
- XVIII. **A subspace-aware kelly's detector using reduced secondary data with fast and slow time**

## **preprocessing**

Saraç U. B., Güvensen G. M.

2019 IEEE Radar Conference, RadarConf 2019, Massachusetts, United States Of America, 22 - 26 April 2019

- XIX. **An Efficient Hybrid Beamforming and Channel Acquisition for Wideband mm-Wave Massive MIMO Channels**  
KURT A., GÜVENSEN G. M.  
IEEE International Conference on Communications (ICC), Shanghai, China, 20 - 24 May 2019
- XX. **A Nearly Optimal Hybrid Precoder Design for Downlink Single-Carrier Wideband Massive MIMO Channels**  
Kilcioglu E., GÜVENSEN G. M.  
30th IEEE Annual International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC), İstanbul, Turkey, 8 - 11 September 2019, pp.119-125
- XXI. **The Effect of Antenna Correlation in Single-Carrier Massive MIMO Transmission**  
Beigiparast N., Güvensen G. M., Ayanoglu E.  
87th IEEE Vehicular Technology Conference, VTC Spring 2018, Porto, Portugal, 3 - 06 June 2018, pp.1-7
- XXII. **A Novel Transceiver Architecture for Highly Dispersive NOMA Channels**  
Güvensen G. M., Tanık Y., Yılmaz A. Ö.  
2018 IEEE 87th Vehicular Technology Conference (VTC Spring), Porto, Portugal, 3 - 06 June 2018, pp.1-6
- XXIII. **On the Impact of Fast-Time and Slow-Time Preprocessing Operations on Adaptive Target Detectors**  
GÜVENSEN G. M., CANDAN Ç.  
IEEE Radar Conference, Oklahoma, United States Of America, 23 - 27 April 2018, pp.1183-1188
- XXIV. **BeamSpace Aware Adaptive Channel Estimation for Single-Carrier Time-varying Massive MIMO Channels**  
Güvensen G. M., Ayanoglu E.  
IEEE International Conference on Communications (ICC), Paris, France, 21 - 25 May 2017
- XXV. **A Generalized Framework on Beamformer Design and CSI Acquisition for Single-Carrier Massive MIMO Systems in Millimeter Wave Channels**  
Güvensen G. M., Ayanoglu E.  
IEEE-Communications-Society Global Communications Conference (IEEE GLOBECOM), Washington, Kiribati, 4 - 08 December 2016
- XXVI. **On Generalized Eigenvector Space For Target Detection in Reduced Dimensions**  
GÜVENSEN G. M., CANDAN Ç., Koc S., ORGUNER U.  
IEEE International Radar Conference (RadarCon), Virginia, United States Of America, 10 - 15 May 2015, pp.1316-1321
- XXVII. **An efficient ungerboeck type MAP receiver for multi-user channel with M-Ary quasi orthogonal signaling M-Ary yaklaşık dikgen sinyalleşme ile çoklu erişim için etkin ungerboeck tipinde MAP alicisi**  
GÜVENSEN G. M., TANIK Y., YILMAZ A. Ö.  
2013 21st Signal Processing and Communications Applications Conference, SIU 2013, Haspolat, Turkey, 24 - 26 April 2013
- XXVIII. **An Efficient Ungerboeck Type MAP Receiver for Multi-User Channel with M - ary Quasi Orthogonal Signaling**  
GÜVENSEN G. M., TANIK Y., YILMAZ A. Ö.  
21st Signal Processing and Communications Applications Conference (SIU), CYPRUS, 24 - 26 April 2013
- XXIX. **Robust spread spectrum type communication with M-ary quasi orthogonal signaling for wireless fading channels M-ary yaklaşık dikgen sinyalleşme ile yayili spektruma sahip sistemler için etkin telsiz haberleşme**  
GÜVENSEN G. M., TANIK Y., YILMAZ A. Ö.  
2012 20th Signal Processing and Communications Applications Conference, SIU 2012, Fethiye, Mugla, Turkey, 18 - 20 April 2012
- XXX. **Diversity Analysis of Optimal SC-FDE MIMO Systems and Comparison with OFDM Based Transmission**  
GÜVENSEN G. M., YILMAZ A. Ö.

22nd IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC), Toronto, Canada, 11 - 14 September 2011, pp.1448-1453

- XXXI. **Cut-off Rate based Outage Probability Analysis of Frequency Hopping Mobile Radio under Jamming Conditions**  
GÜVENSEN G. M., TANIK Y., YILMAZ A. Ö.  
MILCOM Military Communications Conference, San-Jose, Costa Rica, 31 October - 03 November 2010, pp.1684-1689
- XXXII. **On the Carrier Frequency Offset Estimation for Frequency Hopping Burst Mode Mobile Radio**  
GÜVENSEN G. M., TANIK Y., YILMAZ A. Ö.  
MILCOM Military Communications Conference, San-Jose, Costa Rica, 31 October - 03 November 2010, pp.1244-1249
- XXXIII. **Iterative Frequency Domain Equalization for Single-Carrier Wideband MIMO Channels**  
GÜVENSEN G. M., YILMAZ A. Ö.  
20th IEEE Symposium on Personal, Indoor and Mobile Radio Communications, Tokyo, Japan, 13 - 16 September 2009, pp.2661-2665
- XXXIV. **Probability of Full-Diversity for Simple Coded and Rotated Multidimensional Constellation Systems**  
GÜVENSEN G. M., Aktas T., YILMAZ A. Ö.  
20th IEEE Symposium on Personal, Indoor and Mobile Radio Communications, Tokyo, Japan, 13 - 16 September 2009, pp.885-889
- XXXV. **Iterative Decision Feedback Equalization and Decoding for Rotated Multidimensional Constellations in Block Fading Channels**  
GÜVENSEN G. M., YILMAZ A. Ö.  
69th IEEE Vehicular Technology Conference, Barcelona, Spain, 26 - 29 April 2009, pp.1269-1274
- XXXVI. **MIMO channels with limited rate feedback and RVQ MIMO kanallarda sinirli hizda geribesleme ve RVQ**  
Yilmaz A. O., Guevensen G. M.  
2007 IEEE 15th Signal Processing and Communications Applications, SIU, Eskişehir, Turkey, 11 - 13 June 2007

## Metrics

Publication: 50

Citation (WoS): 65

Citation (Scopus): 90

H-Index (WoS): 4

H-Index (Scopus): 4

## Awards

Güvensen G. M., LEOPOLD B FELSEN EXCELLENCE in ELECTROMAGNETICS AWARD, Leopold B Felsen Fund, August 2018