Deniz Gencaga, PhD.

CONTACT

Carnegie Mellon University
Language Technologies Institute
School of Computer Science
5000 Forbes Avenue
Pittsburgh, PA 15213-3891 USA

Antalya Bilim University
Department of Electrical and Electronic Engineering
Ciplakli Mah. Akdeniz Bulvari No:290 A 07190
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CITIZENSHIP

United States of America, Turkey

RESEARCH INTERESTS

- Causality and Uncertainty analysis
- Information Theory
- Bayesian Statistics
- Signal and Image Processing
- Time Series Analysis
- Machine Learning
- Statistical Signal Processing
- Transfer Entropy for Cause and Effect analysis
- Speech Processing and Recognition
- Heavy-tailed distributions
- Remote Sensing
- Robotics

EXPERIENCE

Special Faculty Member, **Carnegie Mellon University, Language Technologies Institute, School of Computer Science** May 2026-present, June 2023-September 2023, June 2024-December 2024.

Assistant Professor, **Antalya Bilim University, Department of Electrical and Electronics Engineering** 2017-present.

Editorial Members of the **Entropy and Sci Journals, MDPI** .

Special Faculty Member/ Postdoctoral Fellow, **Robotics Institute, Carnegie Mellon University**, Pittsburgh, U.S.A. 2014–2016.

Senior Statistical Scientist, **Alcoa Inc.**, New Kensington, U.S.A. 2012–2014.

Research Associate, **Center for Space Sciences at the University of Texas at Dallas**, Richardson, U.S.A. 2011–2012.

Postdoctoral Scientist, **Middle Tennessee State University, Department of Physics and Astronomy**, TN, U.S.A. 2011.

Research Associate, **National Oceanic and Atmospheric Administration (NOAA) and Cooperative Remote Sensing and Technology Center at the City University of New York**, New York, U.S.A. 2009–2011.

Senior Research Support Specialist, **University at Albany (SUNY), Department of Physics**, NY, U.S.A. 2007–2009.

Research and Teaching Assistant, **Bogazici University, Department of Electrical and Electronic Engineering**, 2000–2007.

Visiting Ph.D. Student, **National Research Institute of Italy (Consiglio Nazionale delle Ricerche)**, Italy, 2003–2004.

EDUCATION

Ph.D. Electrical and Electronic Engineering, Bogazici University, 2007.

Ph.D. Dissertation: *Sequential Bayesian Modeling of Non-Gaussian Non-Stationary Processes*

Visiting Ph.D. student Consiglio Nazionale delle Ricerche, 2003,2004.

M.S. Electrical and Electronic Engineering, Bogazici University, 2000.

M.S. Thesis: *Adaptive Escalator Algorithms for System Identification and Their Application to Acoustic Echo Cancellation*

B.S. Electronics and Telecommunication Engineering, Yildiz Technical University, 1997.

AWARDS

Best Paper Award, 4th International Workshop on Biometrics and Forensics, Cyprus, 2016.

Senior Member of IEEE, 2012.

NATO-TUBITAK Research Fellowship, Consiglio Nazionale delle Ricerche, Italy, 2004.

Best Student Paper Award, 13th IEEE Conference on Signal Processing and Communications Applications, May 2005.

The European Research Consortium for Informatics and Mathematics (ERCIM) **"Alain Bensoussan" Postdoctoral Fellowship**, 2006 (preferred another offer).

Nomination and selection to the **Sigma Xi** Scientific Research Honor Society.

INVITED TALKS

Keynote speaker at ACDSA 2025 International Conference on Artificial Intelligence, Computer, Data Sciences and Applications, "Uncovering Casual Dynamics in AI with Transfer Entropy", August 2025.

NASA Jet Propulsion Laboratory, "Identification of Relevant Climate Variables using Information-Theoretic Approaches", October 2008.

Clarkson University, Int. Workshop on Bayesian Inference and Maximum Entropy Methods in Science and Engineering, "A Brief Look at Modeling and Learning Dynamical Systems", July, 2015.

Carnegie Mellon University, Machine Learning for Signal Processing Group, "Particle Filters and Modeling Heavy-tailed processes", 2015.

Columbia University, Machine Learning Group, "Comparison of Information- Theoretic methods to estimate the information flow in a dynamical system", April 2011.

University at Albany (SUNY), "Alpha Stable Processes and their Application to Seismic Data Modeling", November 2007.

Consiglio Nazionale delle Ricerche (CNR), Italy, "Dependent Component Analysis of Non-Stationary Gaussian Signals", October 2005.

PROFESSIONAL ACTIVITIES

Editorial Board Member, **Entropy, Sci journals, MDPI**.

Co-Editor with R. Singh, Special Issue on the Applications of Information-Theoretic Concepts for Generative AI Systems, **Entropy, MDPI**, *currently*

Co-Editor with M. Ganapathiraju, R. Singh, Y. Bensoussan, Special Topic: Advances in AI for Acoustic Diagnostics of Neuromuscular and Respiratory Diseases, **Frontiers in Medicine**, Special Topic: Advances in AI for Acoustic Diagnostics of Neuromuscular and Respiratory Diseases, *currently*

Guest Editor, Special Issue on Information-Theoretic Approaches in Speech Processing and Recognition (9 papers), textbfEntropy Journal, 2024.

Guest Editor, Special Issue on Transfer Entropy (16 papers), **Entropy Journal**, 2018.

Industrial Grant Reviewer, Scientific and Technological Research Council of Turkey (TUBITAK) TEYDEB Industrial Company Grants.

IEEE Chair, IEEE Pittsburgh Chapter, Signal Processing and Control Systems Societies, Pittsburgh, U.S.A. 2013–2017.

General Chair, 1st International Electronic Conference on Entropy and its Applications, Nov, 2014.

Machine Learning Session Chair, 2nd International Electronic Conference on Entropy and its Applications, Nov, 2015.

Machine Learning Session Chair, 3rd International Electronic Conference on Entropy and its Applications, Nov, 2016.

Organizing Committee Assistant, 31st International Workshop on Bayesian Inference and Maximum Entropy Methods in Science and Engineering (MaxEnt 20011), Canada, 2011.

Local Organizer, 27th International Workshop on Bayesian Inference and Maximum Entropy Methods in Science and Engineering (MaxEnt 2007), NY, 2007.

Reviewer, 39th International Workshop on Bayesian Inference and Maximum Entropy Methods in Science and Engineering (MaxEnt 2019), Germany, 2019.

Reviewer, 31st International Workshop on Bayesian Inference and Maximum Entropy Methods in Science and Engineering (MaxEnt 2011), Canada, 2011.

Reviewer, 27th International Workshop on Bayesian Inference and Maximum Entropy Methods in Science and Engineering (MaxEnt 2007)

Reviewer, 15th European Signal Processing Conference (EUSIPCO 2007), Poland, 2007.

Reviewer, 14th European Signal Processing Conference (EUSIPCO 2006), Italy, 2006.

Reviewer, IEEE Int. Conference on Acoustics, Speech and Signal Processing (ICASSP 2006), France, 2006.

Reviewer, 13th European Signal Processing Conference (EUSIPCO 2005), Turkey, 2005.

JOURNAL REVIEWING

IEEE Transactions on Signal Processing	Digital Signal Processing
IEEE Transactions on Image Processing	Entropy MDPI
IEEE Transactions on Information Theory	Journal of the Acoustical Society of America
IEEE Transactions on Neural Networks	IEE Proc.Vision, Image and Signal Processing
Remote Sensing MDPI	Sensors MDPI

PUBLICATIONS

Patents

[1] "Fertilizer compositions and methods of making and using the same". United States Patent No: US 10,377,677 B2. 2019.

[2] "Fertilizer compositions and methods of making and using the same". Also published in other worldwide patent offices including AU,BR,CA,CN,EP,ES,HUE,JP,MX,PL,RU,UA. 2015-2023.

Books

[3] Deniz Gencaga. *Transfer Entropy*. Ed. by Deniz Gencaga. MDPI Books, 2018. ISBN: 978-3-03842-919-7.

Book Chapters

[4] Hajar Farnoudkia, Deniz Gencaga, and Şengül Ayan. "The Application of the R-Vine Copula and Different Regression Models in the Inference of Hodgkin-Huxley Data". In: *Operations Research: Evolving Frontiers and Diverse Applications*. Ed. by V. Purutçuoğlu, G. W. Weber, and H. Farnoudkia. Boca Raton: CRC Press, 2025, pp. 232–249. DOI: 10.1201/9781003540434.

Journals

[5] Deniz Gencaga. "Confounding Factor Analysis for Vocal Fold Oscillations". In: *Entropy* 25.12 (2023). ISSN: 1099-4300. DOI: 10.3390/e25121577. URL: https://www.mdpi.com/1099-4300/25/12/1577.

[6] Deniz Gencaga and Sevgi Ayan. "Analysis of parameter changes of a neuronal network model using transfer entropy". In: *International Advanced Researches and Engineering Journal* 22.3 (Dec. 2020), pp. 208–216. DOI: 10.35860/iarej.747142.

[7] Deniz Gencaga, Sevgi Ayan, Hajar Farnoudkia, and Serdar Okuyucu. "Statistical Approaches for the Analysis of Dependency Among Neurons Under Noise". In: *Entropy* 22.4 (Mar. 2020), p. 387. DOI: 10.3390/e22040387. URL: https://www.mdpi.com/1099-4300/22/4/387.

[8] Deniz Gencaga and Sevgi Ayan. "Effects of Neuronal Noise on Neural Communication". In: *Proceedings* 20.4 (2018), p. 2.

[9] Deniz Gencaga. "Transfer Entropy". In: *Entropy* 33.1 (2019), p. 2.

[10] Deniz Gencaga, Kevin H Knuth, and William B Rossow. "A Recipe for the Estimation of Information Flow in a Dynamical System". In: *Entropy* 17.1 (2015), pp. 438–470.

[11] Deniz Gencaga, Ercan E Kuruoglu, and Aysin Ertuzun. "Modeling non-Gaussian time-varying vector autoregressive processes by particle filtering". In: *Multidimensional Systems and Signal Processing* 21.1 (2010), p. 73.

[12] Deniz Gencaga, Aysin Ertuzun, and Ercan E Kuruoglu. "Modeling of non-stationary autoregressive alpha-stable processes by particle filters". In: *Digital signal processing* 18.3 (2008), pp. 465–478.

[13] Deniz Gencaga, Ercan E Kuruoglu, Aysin Ertuzun, and Sinan Yildirim. "Estimation of time-varying AR SαS processes using Gibbs sampling". In: *Signal Processing* 88.10 (2008), pp. 2564–2572.

Conference Proceedings

[14] Rita Singh, Deniz Gencaga, and Bhiksha Raj. "Formant manipulations in voice disguise by mimicry (BEST PAPER AWARD)". In: *Biometrics and Forensics (IWBF), 2016 4th International Workshop on*. IEEE. 2016, pp. 1–6.

[15] Rita Singh, Joseph Keshet, Deniz Gencaga, and Bhiksha Raj. "The relationship of voice onset time and voice offset time to physical age". In: *Acoustics, Speech and Signal Processing (ICASSP), 2016 IEEE International Conference on*. IEEE. 2016, pp. 5390–5394.

[16] Rita Singh, Bhiksha Raj, and Deniz Gencaga. "Forensic anthropometry from voice: an articulatory-phonetic approach". In: *Information and Communication Technology, Electronics and Microelectronics (MIPRO), 2016 39th International Convention on*. IEEE. 2016, pp. 1375–1380.

[17] D. Gencaga, N. K. Malakar, and D. J. Lary. "Survey on the estimation of mutual information methods as a measure of dependency versus correlation analysis". In: *Bayesian Inference and Maximum Entropy Methods in Science and Engineering*. Vol. 1636. American Institute of Physics Conference Series. Dec. 2014, pp. 80–87. DOI: 10.1063/1.4903714. arXiv: 1401.3358 [stat.ML].

[18] N. K. Malakar, D. J. Lary, D. Gencaga, A. Albayrak, and J. Wei. "Towards identification of relevant variables in the observed aerosol optical depth bias between MODIS and AERONET observations". In: *Bayesian Inference and Maximum Entropy Methods in Science and Engineering*. Ed. by U. von Toussaint. Vol. 1553. American Institute of Physics Conference Series. Aug. 2013, pp. 69–76. DOI: 10.1063/1.4819985. arXiv: 1302.2969 [stat.ML].

[19] Nabin K Malakar, David J Lary, A Moore, D Gencaga, B Roscoe, Arif Albayrak, and Jennifer Wei. "Estimation and bias correction of aerosol abundance using data-driven machine learning and remote sensing". In: *Intelligent Data Understanding (CIDU), 2012 Conference on*. IEEE. 2012, pp. 24–30.

[20] Deniz Gencaga. "Comparison of Information-Theoretic Methods to estimate the information flow in a dynamical system". In: *NASA GISS New York Workshop on Computer, Earth and Space Science*. Ed. by M. Way and C. Naud. 2011, p. 72.

[21] D. Gencaga, D. F. Carbon, and K. H. Knuth. "Characterization of Interstellar Organic Molecules". In: *Bayesian Inference and Maximum Entropy Methods in Science and Engineering*. Ed. by M. D. S. Lauretto, C. A. D. B. Pereira, and J. M. Stern. Vol. 1073. American Institute of Physics Conference Series. Nov. 2008, pp. 286–293. DOI: 10.1063/1.3039011.

[22] Kevin H Knuth, Deniz Gencaga, and William B Rossow. "Information-Theoretic Methods for Identifying Relationships among Climate Variables". In: *NASA Earth-Sun Systems Technology Conference*. 2008. URL: https://esto.nasa.gov/conferences/estc2008/.

[23] D. Gencaga, E. E. Kuruoglu, and A. Ertuzun. "Bayesian Separation of Non-Stationary Mixtures of Dependent Gaussian Sources". In: *Bayesian Inference and Maximum Entropy Methods in Science and Engineering*. Ed. by K. H. Knuth, A. E. Abbas, R. D. Morris, and J. P. Castle. Vol. 803. American Institute of Physics Conference Series. Nov. 2005, pp. 257–265. DOI: 10.1063/1.2149803.

[24] D Gencaga, EE Kuruoglu, and A Ertuzun. "Time-varying autoregressive parameter estimation of Cauchy processes by particle filters (BEST STUDENT PAPER AWARD)". In: *Signal Processing and Communications Applications Conference, 2005. Proceedings of the IEEE 13th*. IEEE. 2005, pp. 408–411.

[25] Deniz Gencaga and Aysin Ertuzun. "On the performance comparison of gradient-type joint process estimators in adaptive signal processing". In: *Signal Processing Conference, 2005 13th European*. EUSIPCO. 2005, pp. 1371–1374. ISBN: 9781604238211.

[26] Deniz Gencaga, E Kuruoglu, and E Aysin. "Synthetic aperture radar image enhancement using particle filters". In: *ESA-EUSC 2005: Image Information Mining - Theory and Applicaiton to Earth Observation: Proceedings of the workshop European Space Agency (ESA). ESA Conference Proceedings No. ESA WPP-257*. European Space Agency, ESRIN.

[27] Deniz Gencaga, Ercan E Kuruoglu, and Aysin Ertuzun. "Estimation of time-varying autoregressive symmetric alpha stable processes by particle filters". In: *Signal Processing Conference, 2005 13th European*. EUSIPCO. 2005, pp. 1363–1366. ISBN: 9781604238211.

[28] D Gencaga and A Ertuzun. "Online Independent Component Analysis (English), Cevrimici Bagimsiz Bilesen Ayristirilmasi". In: *Signal Processing and Communications Applications Conference, 2003. Proceedings of the SIU 11th*. 2003, pp. 7–10.

[29] D Gencaga, L Arslan, and A Ertuzun. "Real-time Formant Frequency Estimator for Speech Signals (English), Konusma Isaretleri icin Gercek Zamanli Bir Formant Frekans Kestiricisi". In: *Signal Processing and Communications Applications Conference, 2002. Proceedings of the SIU 10th*. 2002, pp. 471–475.

[30] D Gencaga and A Ertuzun. "Adaptive Escalator Filter for Acoustic Echo Cancellation (English), Akustik Yanki Giderimi icin Merdiven Tipi Uyarlanir Suzgec Yapisi". In: *Signal Processing and Communications Applications Conference, 2002. Proceedings of the SIU 10th*. 2002.

[31] D Gencaga and A Ertuzun. "Adaptive Escalator Filter for System Identification (English), Sistem Belirlenmesi icin Merdiven Tipi Uyarlanir Suzgec Yapisi". In: *Signal Processing and Communications Applications Conference, 2002. Proceedings of the SIU 10th*. 2002.

Technical Report

[32] D. Gencaga, E. Kuruoglu, and A. Ertuzun. *Estimation of TimeVarying Autoregressive Symmetric Alpha Stable Processes by Particle Filters*. Tech. rep. ISTI-CNR-2006-TR-45. Istituto di Scienza e Technologie dell'Informazione, Consiglio Nazionale delle Ricerche, 2006.

Published Abstract

[33] D. Gencaga, M. Tse, W. Rossow, and K. Knuth. *Estimating Entropies and Mutual Information with Error Bars*. 9th World Conference of the Int. Soc. for Bayesian Analysis (ISBA 2008). 2008.

PROJECTS AND GRANTS

Audio Watermarking and Steganalysis in collaboration with the Center for Voice Intelligence and Security (CVIS) at Carnegie Mellon University, (2023-present)
I have been collaborating with colleagues at Carnegie Mellon University on the research and development of advanced signal processing techniques for audio watermarking and steganalysis. Our work explores multiple embedding strategies, including modifications to amplitude and phase, controlled noise injection, and more sophisticated approaches such as spread-spectrum and feature-based methods across both time and frequency domains. The objective is to ensure that embedded watermarks remain perceptually transparent while maintaining robustness against both classical signal processing attacks and emerging neural network–based threats.

Investigation of the interactions between the neuronal noise and the neuronal network using information-theoretical approaches, (2019-2021)
Principal Investigator, Scientific and Technological Research Council of Turkey. The human brain and the nervous system are made up of a complex network of neurons.Every task in the body can only be achieved with a perfect communication between 89 billion neurons in the brain.Therefore, mapping this massive complex system has been a very hot research topic. In this project, we work on the development and application of information theoretical methods to reveal connections between neurons under noise effect. We use different versions of Transfer Entropy to extract the causal relationships among neurons.

Speech and Audio Biometrics (2014-2016)
I worked on speech biometrics to predict many physical properties of people, such as height and age, using audio records. I worked worked on the effects of micro features of speech, such as the Voice Onset Time and Voice Offset Time, in this prediction. During this work, I compared different prediction methods, such as linear regression (LR), random forest regression (RF), Gaussian process regression (GPR), support-vector regression with a linear kernel (SLK), and a KNN regression (KNN), using TIMIT database. I also worked on the detection of voice disguise using formant information.

Digital forensics applications using computer vision and machine learning (2014-2016)
During my appointment at the Carnegie Mellon University, I worked on the development of a software package for Cyber Mission Readiness and Expertise Evaluation. It has been designed to provide an automated evaluation of cyber-security personnel at mission critical positions. I have worked on designing the computer vision methods to identify predetermined images in a recorded video stream. For this task, the relevant images are extracted using template-matching algorithms on a workstation composed of Graphical Processing Units (GPU). This project has been supported by the Department of Defense and the Software Engineering Institute at the Carnegie Mellon University.

Design of experiments and analysis of industrial data using advanced analytics (2012-2014)
As a Senior Statistical Scientist, I led the statistical section in a multidisciplinary group of twelve people with different areas of expertise. According to my experimental designs, data were collected using different combinations of different materials used in Aluminum production and the outputs of the experiments were interpreted statistically and chemically. With this project, I have been awarded a US patent with my colleagues. In addition to this, I have analyzed different data sets pertaining to tribology, milling and ingot casting processes obtained in the research facilities of Alcoa Inc. My work included the design of automatic control methods, anomaly detection and statistical element screening designs for the experiments of the chemistry group.

Applications of machine learning for remote sensing of aerosols (2011-2012)
Funded by NASA Grant NNX10AM94G and Institute for Integrative Health Award. At The University of Texas, I worked on causality to identify the reasons of biases in the Aerosol Optical Depth (AOD) measurements obtained by satellite based Moderate Resolution Imaging Spectroradiometer (MODIS) instruments and the ground-based Aerosol Robotic Network (AERONET) system. To determine factors,

I designed a methodology incorporating the Artificial Neural Networks (ANN). After training the network, we utilized it to predict the AOD values and demonstrated the success of the approach by the estimation of information-theoretical quantities, such as the Mutual Information.

The assessment of climate feedback processes (2009-2011)
Funded by NASA Grant NNX07AN04G. In order to better understand the climate feedback processes, I designed advanced statistical tools for the Remote Sensing of Climate Group (RSCG) of NOAA-CREST at CCNY. As the traditional linear approaches are not satisfactory to elucidate the relationships between climate variables, I proposed accurate estimation techniques of an information-theoretical quantity, called Transfer Entropy, to determine the cause and effect dependencies among different variables. I provided an approach where three methods, namely the Kernel Density Estimation, the Piecewise-constant Bayesian model and Adaptive partitioning method, are utilized for an accurate estimation from data. I demonstrated the successful results on the highly nonlinear and chaotic Lorenz equations.

Identifying relationships among Earth climate data (2007-2009)
Funded by NASA Grant NNX07AD97A. This work focused on developing information-theoretic techniques to identify relevant climate variables and to quantify the spatial and temporal aspects of their interactions. I developed a novel Bayesian approach to quantify the uncertainties in the estimations from data. I applied these techniques on data taken from the International Satellite Cloud Climatology Project (ISCCP) and analyzed the relationship between the Pacific Sea Surface Temperatures (SST) and the cloud coverage around the globe.

Characterization of interstellar organic molecules (2007-2009)
Funded by NASA Applied Information Systems Research Grant 05-AISR05-0143. I developed Bayesian source separation techniques to identify complex organic molecules in interstellar clouds by analyzing their infrared spectra. Separated source concentrations were provided with their error bars, illustrating the uncertainties involved in the estimation process, unlike the traditional Nonnegative Least Squares method. The approach is demonstrated on synthetic spectral mixtures using spectral resolutions from the Infrared Space Observatory (ISO) and the performance of the method is tested for different noise levels.

Sequential Bayesian modeling of non-stationary non-Gaussian processes and its application to seismic signal modeling (2002-2007)
I developed general, flexible Bayesian methods utilizing Particle Filtering, to model stochastic processes and the statistical dependencies between them. I worked on modeling seismic signals through Bayesian modeling of time-varying autoregressive (TVAR) processes with Alpha-stable distributions. I also developed similar approaches to enhance Synthetic Aperture Radar (SAR) images, model timevarying statistical dependencies between the components of a Vector Autoregressive (VAR) process with non-Gaussian probability distributions and to separate hidden, correlated and time-varying autoregressive sources from their mixtures.

System identification: Acoustic echo cancellation (1999-2000)
I worked on parallel structured adaptive filters to identify unknown systems. I have applied these parallel adaptive filters to remove acoustic echoes in closed environments.

ACADEMIC ADVISING

Thesis Advisor

Advisor of Humair Ali, MS Thesis, Spring 2020 semester, Department of Electrical and Electronic Engineering, Antalya Bilim University. Title: Data Science applications in Neuroscience.

Advisor of Emranul Hoq, MS Thesis, Spring 2018 semester, Department of Electrical and Electronic Engineering, Antalya Bilim University.Kalman filter and its variants for Acoustic Echo Cancellation.

Senior Project Advisor

Advisor of Zeynep S. İleri, EE492 Senior Project, Spring 2025, Title: Analysis of Audio Watermarking by Selective Frame Processing.

Advisor of Osman Tosun, Yunus Emre Özalp, Kubilay Kocababa, EE492 Senior Project, Spring 2024, Title: A Novel Information-Theoretical approach for the Assessment Image Fusion Methods.

Advisor of Cagla Dundar, EE492 Senior Project, Spring 2023, Title: Deep Reinforcement Learning based attitude control of marine vehicles.**(TUBITAK University-Industry joint project grant winner)**

Advisor of Mehmet Enes Kurucu, Harun Tolunay Kaya, Esra Ekinci, Mustafa Bilgin, EE492 Senior Project, Spring 2022, Title: Robotic Arm Design.

Advisor of Serkan Kas, EE492 Senior Project, Spring 2021, Title: Implementation of target tracking algorithms on FPGA.**(TUBITAK University-Industry joint project grant winner)**

Advisor of Berke Haznedar, Berk Bozkurt, Mehmet Sahin, Batuhan Ipek, Tugrul Ture, EE492 Senior Project, Spring 2020, Title: Intelligent Rocker-Bogie Rover.

Advisor of Nuriye Yildirim, Amadou Fane, EE492 Senior Project, Spring 2020, Title: Cubesat prototype.

Advisor of Sila Kocer, Refik Bilgic, Kaan Ataseven, Anil Polat, Mehmet Gokmen, EE492 Senior Project, Spring 2019, Title: Lifeguard Drone. **(TUBITAK University-Industry joint project grant winner)**

Advisor of Mehmet Ozer, Hakan Ergen,Mahmut Ozbek, Fatih Akgeyik, EE492 Senior Project, Spring 2019, Title: Semi Autonomous Search and Rescue Robot.

Advisor of Ertugrul Celik, Mehmet Metin, Murat Dogan, Rafsan Ahmed, Ahmet Kurt, EE492 Senior Project, Spring 2018, Title: Autonomous Pathfinding Vehicle.**(TUBITAK University-Industry joint project grant winner)**

Academic Mentorship

Academic Mentor and Advisor of 33 students of the Electrical Engineering Department, Antalya Bilim University.

TEACHING EXPERIENCE

Assistant Professor

EE4010 Introduction to Generative Artificial Intelligence, Spring 2026 semester Department of Electrical and Electronic Engineering, Antalya Bilim University.

EE431 Digital Signal Processing, Spring 2020, 2021, 2023 and Fall 2024 semesters, Department of Electrical and Electronic Engineering, Antalya Bilim University.

CS421/EE422 Introduction to Robotics, Spring 2019, 2021, 2025 semesters, Department of Electrical and Electronic Engineering, Antalya Bilim University.

EE442 Introduction to Statistical Signal Processing and its Applications, Spring 2019 semester, Department of Electrical and Electronic Engineering, Antalya Bilim University.

EE331/EE313 Signals and Systems, Fall 2019, 2020, 2021, 2022, 2023, 2024, 2025 and Spring 2022 semesters, Department of Electrical and Electronic Engineering, Antalya Bilim University.

EE332 Introduction to Telecommunications, Spring 2018 semester, Department of Electrical and Electronic Engineering, Antalya Bilim University.

EE341/EE342 Feedback and Control Systems, Fall 2017,2018, Spring 2010, 2023, 2024, 2025, 2026 semesters, Department of Electrical and Electronic Engineering, Antalya Bilim University.

EE201 Circuit Theory 1, Fall 2017, 2018, 2019, 2020, 2021, 2022, 2025, Spring 2018, 2022 semesters, Department of Electrical and Electronic Engineering, Antalya Bilim University.

EE201L Circuit Theory 1 Laboratory, Fall 2018, 2019, 2020, 2021, 2022, 2025 semesters, Department of Electrical and Electronic Engineering, Antalya Bilim University.

EE202 Circuit Theory 2, Fall 2023 and Spring 2024 semesters, Department of Electrical and Electronic Engineering, Antalya Bilim University.

EE202 Circuit Theory 2 Laboratory, Spring 2024 semester, Department of Electrical and Electronic Engineering, Antalya Bilim University.

Guest Lecturer

"Introduction to Information Theory", Lecture 5-Part 2 in INFSCI 2595: Introduction to Machine Learning, Fall 2024, School of Computing and Information, **University of Pittsburgh**, October 31, 2024.

"Introduction to Probability Theory, Stochastic Processes and Information Theory", Lecture 5 in INFSCI 2595: Introduction to Machine Learning, Fall 2024, School of Computing and Information, **University of Pittsburgh**, September 26, 2024.

"Bayesian Data Analysis and Signal Processing", Fall 2007 semester, Dept. of Physics, **State University of New York at Albany**.

"Computational Physics", Spring 2008 semester, Department of Physics, **State University of New York at Albany**.

"Computational Physics", Spring 2009 semester, Department of Physics, **State University of New York at Albany**.

"Numerical Methods in Physics", Department of Physics, **University of Texas at Dallas**, 2012.

Teaching Assistant (2000-2007)

Digital Signal Processing

Introduction to Information Theory

Signals and Systems

Communication Systems

Introduction to Speech processing

Numerical methods in Electrical Engineering

Electrical Circuits Laboratory

Communications Laboratory

Thesis Defense Jury Member

Mohamedou Abewa, Novel Waveform Designs for Future Wireless Systems: Non-Coherent OFDM with Subcarrier Power Modulation (NC-OFDM-SPM) and Multi-User Auxiliary Signal Superposition Transmission (MU-AS-ST), M.S. Thesis, Antalya Bilim University, Institute of Post Graduate Education, Electrical and Computer Engineering, 2021.

Esma Kale, Meteorological Drought Forecasting Using Decision Tree, M.S. Thesis, Antalya Bilim University, Institute of Post Graduate Education, Electrical and Computer Engineering, 2021.

Mohammed Kher Hjazi, Signal Space Diversity and Convolutional Neural Network Based Equalizer for Improving the Reliability Performance of Orthogonal Frequency-Division Multiplexing with Sub-Carrier Power Modulation, M.S. Thesis, Antalya Bilim University, Institute of Post Graduate Education, Electrical and Computer Engineering, 2021.

Humair Khan Bughio, Social Network Analysis, M.S. Thesis, Antalya Bilim University, Institute of Post Graduate Education, Electrical and Computer Engineering, 2021.

Muhammad Sanwal, A Hybrid Recommender System, M.S. Thesis, Antalya Bilim University, Institute of Post Graduate Education, Electrical and Computer Engineering, 2020.

Rafsan Ahmed, Utilizing Mutual Exclusivity for The Identification of Cancer Driver Gene Modules, M.S. Thesis, Antalya Bilim University, Institute of Post Graduate Education, Electrical and Computer Engineering, 2020.

Ahmet Kursad Sircan, Modelling Electrical Activity of the Left Ventricle and Computational Analysis of Ion Channels, M.S. Thesis, Antalya Bilim University, Institute of Post Graduate Education, Electrical and Computer Engineering, 2019.

Ilhan Uysal, Some Machine Learning Techniques for Medical Diagnosis, M.S. Thesis, Antalya Bilim University, Institute of Post Graduate Education, Electrical and Computer Engineering, 2019.

PROFESSIONAL MEMBERSHIPS

The Institute of Electrical and Electronics Engineers (IEEE), 1999-present

Association for Computing Machinery (ACM), 2012-present

American Statistical Association (ASA), 2012-2015

International Society for Bayesian Analysis (ISBA), 2008, 2016

Assoc. for the Advancement of Artificial Intelligence (AAAI), 2013-2014

The American Assoc. for the Advancement of Science (AAAS), 2011-2014

Society for Industrial and Applied Mathematics (SIAM), 2012-2013

American Society of Mechanical Engineers (ASME), 2012-2014

Institute of Industrial Engineers (IIE), 2013-2014

Institute of Mathematical Statistics (IMS), 2012-2014

The New York Academy of Sciences (NYAS), 2010-2013

American Geophysical Union (AGU), 2008-2012

American Meteorological Society (AMS), 2010-2013

The European Association for Signal and Image Processing, 2005

References are available upon request.