

## Assoc. Prof. ENVER ÇAVUŞ

### Personal Information

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### International Researcher IDs

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### Biography

Enver Cavus received the B.Sc. degree in Electrical Engineering from University of Southern California in 1999 and M.S. and Ph.D degrees from the University of California, Los Angeles, in 2002 and 2007 respectively in the area of integrated circuits and systems.

He is an Associate Professor in the Electronics and Communication Engineering Department, Ankara Yıldırım Beyazıt University, Turkey. His research interests include efficient FPGA/VLSI implementations of communication and image processing algorithms. In August 2012, he co-founded Tera Microelectronics, Ankara, Turkey, a company focused on developing baseband and RF IC solutions for the military and commercial applications. From 2006 to 2009, he was a staff scientist at the Broadband VLSI group, Broadcom Corp., Irvine, CA, where he was involved in the design and implementation of LDPC codes for various communication standards. Mr. Cavus was awarded first prize in the ISSCC/DAC 2003 design contest.

### Education Information

Doctorate, University of California, Los Angeles, Faculty of Engineering, Electrical Engineering, United States Of America 2002 - 2007

Postgraduate, University of California, Los Angeles, Faculty of Engineering, Electrical Engineering, United States Of America 1999 - 2002

Undergraduate, University of Southern California, Faculty of Engineering, Electrical Engineering, United States Of America 1995 - 1999

### Foreign Languages

English, C1 Advanced

### Dissertations

Doctorate, Techniques for the Decoding of Low Density Parity Check Codes: Efficient Simulation,Algorithm Improvement

and Implementation, University Of California, Los Angeles, Circuits And Systems, 2007

Postgraduate, A Computationally Efficient ASIC Implementation of Space-Time Block Decoder, University of California, Los Angeles, Circuit And Systems, 2002

## Research Areas

Error Corrector Codes, Telecommunication Applications, Electronic Circuits

## Academic Titles / Tasks

Associate Professor, Ankara Yıldırım Beyazıt University, Mühendislik ve Doğa Bilimleri Fakültesi, Elektrik-Elektronik Mühendisliği, 2018 - Continues

Assistant Professor, Yıldırım Beyazıt Üniversitesi, Mühendislik Ve Doğa Bilimleri Fakültesi, Elektronik Ve Haberleşme Mühendisliği Bölümü, 2012 - Continues

Assistant Professor, Bilecik Seyh Edebali University, Faculty Of Engineering, Department Of Electrical And Electronics Engineering, 2009 - Continues

## Advising Theses

Çavuş E., Study of utilizing multiple inertial measurement units for strapdown inertial navigation systems without global positioning system aid, Postgraduate, O.TOKLUOĞLU(Student), 2019

Çavuş E., An optimized FFT based acquisition method for GPS receivers, Postgraduate, N.YENİGÜN(Student), 2019

Çavuş E., Performance comparison of image matching algorithm using fpga and gpu, Postgraduate, İALP(Student), 2017

Çavuş E., Sayısal haberleşme sistemlerinde esnek karar verme demodülasyon yöntemlerinin FPGA üzerinde etkin bir şekilde gerçekleştirilmesi, Postgraduate, E.KIRKAYA(Student), 2016

Çavuş E., An eg-ldpc based 2-dimensional error correction code for mitigating multibit upsets of sram memories, Postgraduate, A.TURAN(Student), 2015

Çavuş E., Performance improvement methods for layered decoding of ldpc codes, Postgraduate, M.SEVER(Student), 2015

Çavuş E., Elektronik destek sistemleri için 2 – 18 GHz RF ön alıcı tasarımı, Postgraduate, B.ŞENTÜRK(Student), 2014

Çavuş E., Lorenz kaotik sisteminin sabit noktalı sayı gösterimi ile FPGA üzerinde gerçekleştirilmesi ve analizi, Postgraduate, E.GÜNGÖR(Student), 2012

Çavuş E., Endüstriyel uygulamalar için linux tabanlı 3G haberleşme özellikli akıllı modbus mesaj önceliklendirme mekanizmalı Modbus Gateway tasarımı, Postgraduate, B.DEMİR(Student), 2012

Çavuş E., SMS ve Android tabanlı uygulamalarla sınıf içi etkileşimin artırılması, Postgraduate, Y.MUŞTU(Student), 2012

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

- I. **Coordinate Interleaved Faster-than-Nyquist Signaling**  
ÇİÇEK A., ÇAVUŞ E., Bedeer E., Marsland I., Yanikomeroglu H.  
IEEE Communications Letters, vol.27, no.1, pp.229-233, 2023 (SCI-Expanded)
- II. **Self calibrated cooler-less microbolometer readout architecture**  
Gülden M. A., Zencir E., ÇAVUŞ E.  
Integration, vol.82, pp.14-19, 2022 (SCI-Expanded)
- III. **Low-Complexity MIMO MMSE Receiver with Performance Enhancement via Coordinate Interleaving**  
ÖZYURT S., Öztürk M., ÇAVUŞ E.  
Journal of Circuits, Systems and Computers, vol.29, no.14, 2020 (SCI-Expanded)
- IV. **Analysis and FPGA Implementation of Zero-Forcing Receive Beamforming with Signal Space**

### **Diversity under Different Interleaving Techniques**

Reşat M. A., Çiçek A., Özyurt S., Çavuş E.

Journal of Circuits, Systems and Computers, vol.29, no.1, 2020 (SCI-Expanded)

- V. **A Novel Current-Controlled Oscillator-Based Low-Supply-Voltage Microbolometer Readout Architecture**  
Gülden M. A., Zencir E., ÇAVUŞ E.  
Journal of Circuits, Systems and Computers, 2019 (SCI-Expanded)
- VI. **Design of a system solution that modernizes legacy supervisory control and data acquisition systems as an early detection system**  
Demir B., Tumay A., ÖZBEK M. E., Cavus E.  
Measurement and Control (United Kingdom), vol.51, pp.205-212, 2018 (SCI-Expanded)
- VII. **Syndrome-based scheduling: Simple adaptive scheduling technique for decoding LDPC codes**  
Sever M., Cavus E.  
Electronics Letters, vol.51, no.16, pp.1261-1263, 2015 (SCI-Expanded)
- VIII. **Computationally efficient decoding of LDPC codes**  
Cavus E., Daneshrad B.  
Electronics Letters, vol.45, no.18, pp.946-948, 2009 (SCI-Expanded)
- IX. **Low BER performance estimation of LDPC codes via application of importance sampling to trapping sets**  
Cavus E., Haymes C. L., Daneshrad B.  
IEEE Transactions on Communications, vol.57, no.7, pp.1886-1888, 2009 (SCI-Expanded)
- X. **A very low-complexity space-time block decoder (STBD) ASIC for wireless systems**  
Cavus E., Daneshrad B.  
IEEE Transactions on Circuits and Systems I: Regular Papers, vol.53, no.1, pp.60-69, 2006 (SCI-Expanded)

### **Articles Published in Other Journals**

- I. **FPGA Implementation of Flexible Successive-Cancellation Polar Decoder**  
Sertkaya M. F., ÇAVUŞ E.  
Bilecik Şeyh Edebali Üniversitesi Fen Bilimleri Dergisi, vol.10, no.1, pp.76-81, 2023 (Peer-Reviewed Journal)
- II. **FPGA Implementation of Variable-Length Split-Radix FFT Algorithm**  
İnceöz E., ÇAVUŞ E.  
International Journal of Engineering Science and Computing, vol.7, no.7, 2017 (Peer-Reviewed Journal)

### **Refereed Congress / Symposium Publications in Proceedings**

- I. **Coded Faster-than-Nyquist Signaling for Short Packet Communications**  
Cerci E., ÇİÇEK A., ÇAVUŞ E., Bedeer E., Yanikomeroglu H.  
32nd IEEE Annual International Symposium on Personal, Indoor and Mobile Radio Communications, PIMRC 2021, Virtual, Helsinki, Finland, 13 - 16 September 2021, vol.2021-September, pp.428-433
- II. **Vehicle detection in aerial imaginary using a miniature CNN architecture**  
Ozturk M., ÇAVUŞ E.  
2021 International Conference on INnovations in Intelligent SysTems and Applications, INISTA 2021, Kocaeli, Turkey, 25 - 27 August 2021
- III. **Polar Coded Faster-than-Nyquist (FTN) Signaling with Symbol-by-Symbol Detection**  
Caglan A., ÇİÇEK A., ÇAVUŞ E., Bedeer E., Yanikomeroglu H.  
2020 IEEE Wireless Communications and Networking Conference, WCNC 2020, Seoul, South Korea, 25 - 28 May 2020
- IV. **PERFORMANCE COMPARISON OF CMOS LC VCO CIRCUITS**

ŞANLI M., ZENCİR E., ÇAVUŞ E.

International Marmara Sciences Congress (, 1 - 03 November 2019

- V. **FPGA Implementation of Synchronization Techniques used in OFDM Systems**  
KARAKOÇ M. C., Sertkaya M. F., kirkaya e., ÇAVUŞ E.  
2019 27th Signal Processing and Communications Applications Conference (SIU), Sivas, Turkey, 24 - 26 April 2019
- VI. **FPGA Tabanlı KKS Alıcısı İçin GeliştirmePlatformu**  
Yenigün N., ÇAVUŞ E.  
Sinyal İşleme ve İletişim Uygulamaları (SİU) Kurultayı, Turkey, 24 - 26 April 2019
- VII. **Study of Utilizing Multiple IMUs for Inertial Navigation Systems Without GPS Aid**  
TOKLUOĞLU O., ÇAVUŞ E.  
2019 1st Global Power, Energy and Communication Conference (GPECOM), Nevşehir, Turkey, 12 - 15 June 2019
- VIII. **Baseband implementation of high speed communication system on FPGA**  
Öztürk M., Kırkaya E., Balcısoy E., ŞANLI M., ÇİÇEK A., ÇAVUŞ E.  
2018 26th Signal Processing and Communications Applications Conference (SIU), Izmir, Turkey, 2 - 05 May 2018
- IX. **FPGA implementation of MMSE channel estimation algorithm using system generator**  
ŞANLI M., öztürk m., balcısoy e., KARAKOÇ M. C., kirkaya e., ÇİÇEK A., ÖZYURT S., ÇAVUŞ E.  
2018 26th Signal Processing and Communications Applications Conference (SIU), Izmir, Turkey, 2 - 05 May 2018
- X. **FPGA implementation of symbol timing synchronization for OFDM systems**  
KARAKOÇ M. C., kirkaya e., ERSOY Ö., ŞANLI M., ÇİÇEK A., ÇAVUŞ E., ÖZYURT S.  
2018 26th Signal Processing and Communications Applications Conference (SIU), Izmir, Turkey, 2 - 05 May 2018
- XI. **Design of Frequency Upconversion and Downconversion Blocks for 240 GHz Communication Systems**  
Ersoy O., Sahin A. B., Cicek A., Karakoc M. C., Cavus E., Ozyurt S.  
25th Signal Processing and Communications Applications Conference (SIU), Antalya, Turkey, 15 - 18 May 2017
- XII. **FPGA Implementation of AWGN Noise Generator Using Box-Muller Method**  
Caglan A., Inceoz E., Balcısoy E., Ozbek M. E., ÇAVUŞ E.  
24th Signal Processing and Communication Application Conference (SIU), Zonguldak, Turkey, 16 - 19 May 2016, pp.1813-1816
- XIII. **Parallelizing LDPC Decoding using OpenMP on Multicore Digital Signal Processors**  
Sever M., ÇAVUŞ E.  
45th International Conference on Parallel Processing (ICPP), Pennsylvania, United States Of America, 16 - 19 August 2016, pp.46-51
- XIV. **An EG LDPC Based 2 Dimensional Error Correcting Code for Mitigating MBUs of SRAM Memories**  
ÇAVUŞ E., Erozan A.  
FPGA World Conference, Stockholm, Sweden, 8 - 10 September 2015
- XV. **Kısa Mesaj Sunucusu SMS Gateway Tasarımı**  
Muştı Y., Çavuş E.  
ELEKTRİK - ELEKTRONİK ve BİLGİSAYAR MÜHENDİSLİĞİ SEMPOZYUMU, Bursa, Turkey, 29 November - 01 December 2012
- XVI. **An IS Simulation Technique for Very Low BER Performance Evaluation of LDPC Codes**  
ÇAVUŞ E., Babak D.  
2006 IEEE International Conference on Communications, İstanbul, Turkey, 11 - 15 June 2006, vol.3, pp.1095-1100
- XVII. **A Computationally Efficient Selective Node Updating Scheme for Decoding of LDPC Codes**  
ÇAVUŞ E., Babak D.  
MILCOM 2005 - 2005 IEEE Military Communications Conference, Atlantic City, NJ, USA, United States Of America, 17 - 20 October 2005, vol.3, pp.1375-1379
- XVIII. **A Performance Improvement and Error Floor Avoidance Technique for Belief Propagation Decoding of LDPC Codes**  
ÇAVUŞ E., Daneshrad B.  
2005 IEEE 16th International Symposium on Personal, Indoor and Mobile Radio Communications, Berlin, Germany, Germany, 11 - 14 September 2005, vol.4, pp.2386-2390

## **XIX. A Computationally Efficient Algorithm for Space Time Block Decoding**

ÇAVUŞ E., Daneshrad B.

Proceedings of IEEE International Communications Conference (ICC), Helsinki, Finland, 11 - 14 June 2001, vol.4, pp.1157-1162

## **Supported Projects**

Çavuş E., TUBITAK Project, Development of Microbolometer Integrated Circuit Employing VCO-Based ADC, 2018 - 2020

Çavuş E., Şahin A. B., Özyurt S., TUBITAK Project, 0 24 Thz Bantında Görüş Hattı Bulunmayan Bina İçi Uygulamalar İçin Kanal Kodlamalı Mimo Ofdm Haberleşme Sisteminin Deneysel Olarak Geliştirilmesi, 2015 - 2018

ÇAVUŞ E., Project Supported by Higher Education Institutions, A Simple Adaptive Scheduling Technique for Decoding of LDPC Codes, 2017 - 2017

ÇAVUŞ E., Project Supported by Higher Education Institutions, İmge Eşleme İşlemlerinin FPGA Üzerinde Hızlandırılması, 2015 - 2017

ÇAVUŞ E., Project Supported by Higher Education Institutions, Syndrome-based scheduling: simple adaptive scheduling technique for decoding LDPC codes, 2016 - 2016

ÇAVUŞ E., Project Supported by Higher Education Institutions, SRAM TABANLI CİHAZLARDA GENİŞ ÇAPLI ÇOKLU-BİT HATALARINA (MBU) KARŞI ETKİN KODLAMA TEKNİKLERİN DONANIMSAL ANALİZİ, 2014 - 2016

ÇAVUŞ E., TUBITAK Project, Düşük Yoğunluklu Eşlik Denetim Low Density Parity Check LDPC Kodları için Yüksek Başarımli IP Core Geliştirilmesi, 2013 - 2015

## **Patent**

ÇAVUŞ E., Traveling Wave Based High-Speed Sampling System, Patent, CHAPTER A Human Needs, 2015

## **Metrics**

Publication: 32

Citation (WoS): 1

Citation (Scopus): 125

H-Index (WoS): 1

H-Index (Scopus): 5

## **Non Academic Experience**

Business Establishment Private, Tera Microelectronics, Digital System Design

TUBITAK, TUBITAK Space Technologies Research Institute, Consultant

Business Organization (private), Broadcom Corporation, Broadband VLSI