

HAKAN ÇAĞLAR, PhD



1. Work Experience :

- 2018-2020: Arı Consulting Engineering Com., Partner,
2008-2018: ANEL R&D Com., Gen.Mng.,
(Part-Time Teaching TOBB ETU, Başkent Üniv.)
2007 - 2008: TOBB ETU, Computer Science. Dept., Asoc.Prof.Dr.
1999 - 2007: Deputy General Manager (Software and Information Technology Systems) Havelsan A.Ş.
- SADER 2003-2005 : (Savunma Sanayicileri Derneği) : Member of the Board
Havelsan Teknoloji Radar AŞ. (HTR) 2003-2006 : Member of the Board
1997 – 1999: Software Systems Director, Havelsan AŞ.
1996 - 1999: Research and Development (R&D) Manager Havelsan A.Ş.
1992 - 1996: Senior Researcher, Turkish Scientific and Technical Research Council, Marmara Research Center (Tübitak-MRC), Information Technologies Research Institute, Space Science Dept., Turkey.
- 1993- 1996: Associate Professor, Boğaziçi University, and Technical University of İstanbul, Turkey.
1992- 1993: Assist. Professor, Boğaziçi University, and Technical University of İstanbul, Turkey.
1988 - 1991: Instructor, Research Fellow, Teaching Fellow, New Jersey Institute of Technology, NJ, USA.

2. 1 Research Interest & Projects:

- Information Security, Attack Graph Optimization, Risk Analysis & Risk Management, Network Simulation & Cyber Attack Modeling.
- Semantic Web Technologies (Web 2.0, Web 3.0), Internet of Things, Information Retrieval & Data Mining, Text Analysis & NLP Techniques.
- Smart System & Services, Smart Mobile Application on Smart Phones (Android & I-Phone) and Tablets.
- Digital image & video processing, digital video coding & compression, HD-TV, Video on demand, videophone and multimedia applications.
- Satellite imaging & remote sensing, (LANDSAT, SPOT, SAR) data fusion, segmentation, classification & pattern recognition algorithms and GIS applications.

- Image processing, computer vision, pattern recognition, artificial intelligence & neural networks for speech, image and video signal. (Boğaziçi Univ.-BUSIM).
- Software engineering process, (Mil-std 498, IEEE /EIA 12207), systems engineering process (Mil-std 499B, IEEE std 1220, INCOSE), software quality assurance (SEI-CMMI), software project management.
- Command, control, communication, computer, intelligence, surveillance, reconnaissance (C4ISR) systems for military applications, interoperability, DII-COE, SOA architecture, Air force integrated command & control system, mission planning system for F-16 & F-2020.
 - Supervised & managed over 300 Software and Systems Engineers in the field of Command and Control Systems. Yearly income of 20M\$ for last 6 years.
 - Air Force, Navy and Army C² systems were developed and delivered.
 - Secure message handling systems were delivered to General Staff.
 - About 6M\$ C² System Software has been exported to Thales, France.
- E-Government applications, (National Justice Information System, Land Registry and Cadastral Information System, Computer Supported Central Elections Registry System, Hospital Information System etc.).
 - Supervised managed over 150 Software and Systems engineers for e-government project and large-scale MIS applications, yearly income of 10M\$ for last 4 years.
 - ERP (Enterprise Resource Planning) namely (SAP R/3, Oracle ERP) and re-useable COTS based solutions.
- Homeland security, border security, underwater security, pipelined security, intelligence city & face recognition, information & internet security.

2.2 R&D Projects Completed:

- The first national Guard system, information security product, were developed and has been used in military applications, 2004.
- A New National Firewall for Security of Computer Networks: Supported by Tübitak with the highest priority. Within the framework of the project, encryption, authentication algorithms, (RSA, DES, IDEA, SaferKey 64, CBC, MD5) has been developed. Products are in use various military and government institutions, 2001.
- CELP (Code Exited Linear Prediction) Coding (FED STD 1016), Echo Canceller and Facsimile Functions are developed on Fixed Point DSP TMSC548 and used for Military Applications, 1999.
- 800 b/s Speech Coding Project: Very low bit rate (800 b/s) Digital Voice Communication System (NATO Stanag 4479) used for HF/SSB, VHF Radio and Telephone Circuits for a military program, 1999.
- “Computer Vision Based Textile Quality Inspection System,” It Determines 1mmx1mm defect in Textile for moving 2m/s speed and 2m Length. By Using Line Scan Cameras and Computer Vision Algorithms Based on ASIC Solutions. Project Manager, 1995.
- “Fingerprints Recognition and Wavelet Transform Based Compression,” applied to Turkish Police Dept., Head Quarters. It involves computer vision, very high rate image processing techniques for fingerprint data and almost lossless data compression techniques for archiving. Project Manager, 1995.
- “Grain Acreage Estimation in Turkey by using Remote Sensing Techniques,” supported by Turkish Statistical Institute. Project includes image processing and classification

algorithms applied to remotely sensed multi-spectral data like LANDSAT and SPOT satellite images. Senior Researcher and Group Leader, 1994.

- Jan 1989-Dec 1991: Senior Researcher, Visual Data Communications for Still and Video Images. JPEG and Wavelet Transform Based Image Compression Techniques for Still Images.H.261, MPEG for Video Images like Videophone and HDTV (High Definition TV) applications. Very Low Bit Rate Image Coding Techniques for Video.

3. Education :

Ph.D. in Electrical Engineering & Computer Science, New Jersey Institute of Technology, Newark, NJ 07102 December, 1991.

Thesis Title: A Generalized, Parametric PR-QMF / Wavelet Transform Design Approach for, Multi-resolution Signal Decomposition for Still and Video Image Coding.

M.S. in Electrical Engineering, Polytechnic University-NYU, Brooklyn, NY, 11201, January 1988. “Automatic Control and Robotics”

B.S. in Electrical Electronics Engineering, Technical University of Istanbul, Turkey, 1984.

4. Courses Taught at Undergraduate & Graduate Level: (Boğaziçi Üniv., İTÜ, TOBB ETÜ)

- Video Coding & IP-TV
- Digital Signal Processing
- Digital Control Theory & Digital Design
- Nonlinear Control & Robotics
- Multi-resolution Signal Decomposition : Transforms, Sub-bands, and Wavelets
- Linear Systems Theory, Circuit and Systems
- Probability Theory & Stochastic Process
- Digital Image Processing, & Computer Vision
- Systems & Software Engineering
- Software Project Management

5. Graduate Students Supervised :

- Sami Arıca, Ph.D. “Unequal Bandwidth PR Filter Bank Design Techniques.” Çukurova University.
- Işın Celasun, Ph.D. “Multidimensional Filter Banks for Video Coding.” Boğaziçi University.
- Timuçin Ozuğur, M.S., July 1995. Thesis Title: “Design of Nyquist Signals Based on Generalized Sampling Theory for Data Communication.” Boğaziçi University.
- Belgin Bilge, M.S., Oct. 1995. Thesis Title: “Data Compression on Remotely Sensed Data.” Boğaziçi University.
- A.Taylan Cemgil, M.S., Oct. 1995. Thesis Title: “Single Tone Music Note Identification via Wavelet Transform.” Boğaziçi University.
- Sinan Güntürk, BS, May 1996, Thesis Title: “Permutation Based Orthogonal Transform Design Techniques.” Boğaziçi University.

6. Scholarly Activities:

6.1 Journal Papers:

1. H. Çağlar, S. Güntürk, E. Anarım, B. Sankur, "Permutation Based Design of Orthogonal Block Transforms and Filter Banks, " *Multidimensional Systems and Signal Processing*, Vol.12, No.1, pages.63-79, January 2001.
2. E. Yazıcıoğlu, S. Balkır, G. DüNDAR and H. Çağlar, "Implementation of a new orthogonal shuffled block transform for image coding applications," *Journal of Real Time Imaging*, Vol. 6, No. 1, pp. 39 – 46, February 2000.
3. E. Panayirci, T. Ozugur, H. Caglar, " Design of optimum Nyquist signals based on generalized sampling theory for data communications", *IEEE Transactions on Signal Processing*, Vol. 47, No. 6, pages. 1753-1759, Jun 1999.
4. H. Çağlar, S. Güntürk, B. Sankur and E. Anarım, "VQ-Adaptive Block Transform Coding of Images", *IEEE Trans. on Image Processing*, Vol. 7, No.1, January 1998.
5. O.Alkın, H.Çağlar "Design of Efficient M-Band Coders with Linear Phase and Perfect Reconstruction Properties," *IEEE Transactions on Signal Processing*, Vol.43, No.7, pages.1579-1591, July 1995.
6. H.Çağlar, O.Alkın, E.Anarım and B.Sankur "New Efficient Shuffled Block Transform Design Technique," *IEE Electronics Letters*, Vol.30, No.11, pages.834-835, May 1994.
7. E.Anarım, B.Sankur, H.Çağlar, I.Celasun "Design of Non-separable 2-D Linear Phase Filter Banks via Shuffling Operations," *IEE Electronics Letters*, Vol.30, No.11, pages.843-844, May 1994.
8. A.N.Akansu, H.Çağlar, Y.Liu "An Objective Performance Measure in Multi-resolution Signal Decomposition," *IEEE Trans. on Signal Processing*, Vol.41, No.11, pages.3153-3157, Nov 1993.
9. H.Çağlar, Y.Liu, A.N.Akansu, "Optimal PR-QMF Design for Sub-band Image Coding," *Journal of Visual Communication and Image Representation*, Vol.4, No.3, pages.242-253, Sept. 1993.
10. H.Çağlar, A.N.Akansu, "Generalized, Parametric PR-QMF Design Technique Based on Bernstein Polynomial Approximation," *IEEE Transactions on Signal Processing*, Vol.41, No.7, pages.2314-2321, July 1993.
11. A.N.Akansu, R.Haddad, H.Çağlar, "Binomial QMF-Wavelet Transform for Multiresolution Signal Decomposition," *IEEE Transactions on Signal Processing*, Vol.41, No.1, ppages.13-19, Jan. 1993.

6.2 Published Conference Papers (International):

1. T. Ozugur, E. Panayirci, H. Caglar, " Design of optimum Nyquist signals based on generalized sampling theory for data communications", pages.219-224, 1998
2. H.Çağlar, S.Güntürk, E.Anarım, B.Sankur, "A New Permutation Based Orthogonal Block and Lapped Transform Design Technique," *European Conference n Circuit Theory and Design'95*, pp 825-828, August 1995, İstanbul, Turkey.
3. I.Celasun, E.Anarım, B.Sankur, H.Çağlar, S.Güntürk, "Design of 2-D M-Band Nonseparable Linear Phase Perfect Reconstruction Filter Banks (PRFB)," *European Conference on Circuit Theory and Design'95*, August 1995, İstanbul, Turkey.
4. H.Çağlar, E.Anarım, B.Sankur, I.Ölçer, "VQ Based Adaptive Block Transform Design Techniques," *IEEE Workshop on Nonlinear Signal and Image Processing*, June-1995, pp.687-681, Halkidiki, Greece.

5. A. T. Cemgil, E. Anarım and H. Caglar, "Comparison of Wavelet Filters for Pitch Detection of Monophonic Music Signals," In Proceedings of European Conference on Circuit Theory and Design, (ECCTD95), 1995.
6. I.Celasun, B.Sankur, E.Anarım, H.Çağlar, "Design Issues for Matched Wavelets," V. Mediterranean Electrotechnical Conference, pp.84-87, April 1994, Antalya.
7. H. Caglar, O. Alkin, E. Anarım, B. Sankur, "Shuffle Based M-Band Filter Bank Design, " SPIE Symposium on Visual Communication and Image Processing'94, Vol. 2308, pp. 994-1004, 25-28 Sept. 1994, Chicago.
8. K. Harmanci, E. Anarım, H. Caglar, B. Sankur, "2-D Non-separable PR Filter Bank Design Based on Bernstein Polynomial Approximation", SPIE Sym. Visual Communication and Image Processing'94 (Vol. 2308), p. 513-523, 25-28 Sept. 1994, Chicago.
9. H.Çağlar, O.Alkın, B.Sankur, E.Anarım, "Design of M-Channel Wavelet Transform Basis," Int. Conf. on Telecommunications." Dubai, pp.1-7, Jan. 1994.
10. H.Çağlar, B.Sankur, E.Anarım, "Matched Wavelet Design and Coding Gain Performance," MDSP'93: 8'th IEEE Conf. on Multidimensional Signal Processing, pp.144-145, Sept. 1993, France.
11. H.Çağlar, F.Gürgen, A.N.Akansu, "A New PR-QMF Design Technique with Bernstein Polynomial Approximation," Proc. ICSPAT, Santa Clara, California, pp.345-349, Oct. 1993.
12. H.Çağlar, A.N.Akansu, "PR-QMF Design with Bernstein Polynomials," Proc. IEEE ISCAS, pp.999-1002, San Diego, May 1992.
13. A.N.Akansu, H.Çağlar, "A Measure of Aliasing Energy in Multi-resolution Signal Decomposition," Proc. IEEE ICASSP. pp.IV 621-624, San Francisco, March, 1992.
14. H.Çağlar, Y.Liu, A.N.Akansu, "Statistically Optimized PR-QMF Design," Proc. SPIE Visual Communications and Image Processing, Vol.1605, pp.86-94, Boston, Nov. 1991.
15. A.N.Akansu, R.A.Haddad, H.Çağlar, "Perfect Reconstruction Binomial QMF-Wavelet Transform," Proc. SPIE Visual Communications and Image Processing, pp.360-367, Lansanne, Sept. 1990.

6.3 Published Conference Papers (National):

1. H.Çağlar, T.Köprülü, "Büyük Ölçekli Bilgi Sistemlerinin Güvenlik Mimarisi ve Bileşenleri", IEEE 12.Sinyal İşleme ve İletişim Uygulamaları Kurultayı, pp.7-13,Kuşadası Nisan 2004, Turkey.
2. H.Çağlar, "Bilgi Sistemleri Güvenlik Mimarisi", Türkiye Bilişim Derneği, Bilgi İşlem Merkezi Yöneticileri Semineri (BİMY'11) 8-11 Nisan 2004, Antalya.
3. T.Köprülü, H.Çağlar, "Büyük Ölçekli Bilgi Sistemlerinin Güvenlik Mimarisi ve Bileşenleri", Proceedings of IEEE SIU 2004 (12th National Conference on Signal Processing and Applications), 28-30 Nisan 2004, Kuşadası.
4. E.Yazıcıoğlu, G.Dündar, S.Balkır, H.Çağlar, "Devşirimli Blok Dönüşümünü ve Ters Dönüşümünü Gerçekleyen Tümdevrelerin VLSI Tasarımı," 5. Proc. Signal Processing and Applications, pp.679-684, Kuşadası, May 1997, Turkey.
5. A.T.Cemgil, E.Anarım, H.Çağlar, "Tek Sesli Müzik İşaretlerinin Notalandırılmasında Dalgacık Süzgeçlerinin Karşılaştırılması," 3. Proc. Signal Processing and Applications, Kapadokya, pp.132-138 April, 1995, Turkey.
6. Y.Atabek, G.Dündar, S.Balkır, H.Çağlar, E.Anarım, "M-Bantlı Dalgacık Dönüşümlerini Gerçekleyen Mimarilerin Tasarımı," 3. Proc. Signal Processing and Applications, Kapadokya, pp.286-290 April, 1995, Turkey.

7. I.Celasun, E.Anarım, B.Sankur, H.Çağlar, S.Güntürk, “İki-Boyutlu Ayrışmaz Süzgeç Kümelerinin Tasarımı,” 3. Proc. Signal Processing and Applications, pp.164-169 April, 1995, Turkey.
8. S.Güntürk, H.Çağlar, E.Anarım, B.Sankur, “Devsirmeye Dayalı Örtüşmeli Dikgen Dönüşümler,” 3. Proc. Signal Processing and Applications, pp.7-12 Kapadokya, April, 1995, Turkey.
9. T.Akdoğan, B.Sankur, H.Çağlar, N.Yananlı, E.Anarım, “Parmakizi İmgelerinin İyileştirilmesi ve Özniteliklerinin Bulunması,” 3. Proc. Signal Processing and Applications, Kapadokya, pp.48-54 April, 1995, Turkey.
10. H.Çağlar, E.Anarım, B.Sankur, I.Ölçer, “Vektör Nicemlemeye Dayalı Blok Dönüşüm Tasarımı,” 3. Proc. Signal Processing and Applications, pp.78-83 Kapadokya, April, 1995, Turkey.
11. I.Celasun, E.Anarım, B.Sankur, H.Çağlar, “İki Boyutlu Doğrusal Evreli Ayrışmaz Süzgeç Kümelerinin Tasarımı,” II. Proc. Signal Processing and Applications, pp.310-314, Gökova, Turkey, 1994.
12. I.Celasun, E.Anarım, B.Sankur, H.Çağlar, “Tam Geriçatmalı Dördün Yansımali (PR-QMF) Süzgeç Kümelerinin Kodlama Kazancı,” II. Proc. Signal Processing and Applications, pp.366-370 Gökova, Turkey, 1994.
13. İ.German, İ.Ölçer, H.Çağlar, “Aradeğerlemeye Dayalı Bir İmge Sıkıştırma Tekniği-II,” II. Proc. Signal Processing and Applications, pp.35-41 Gökova, Turkey, 1994.
14. K.Harmancı, E.Anarım, B.Sankur, H.Çağlar, “2-Boyutlu Ayrışmaz Tam Geriçatmalı Süzgeçlerin Bernstein Polinom Yaklaşıklığı ile Tasarımı” II. Proc. Signal Processing and Applications, pp.316-321 Gökova, Turkey, 1994.
15. H.Çağlar, F.Gurgen, A.N.Akansu, “Bernstein Polinomları Kullanarak Kayıpsız İki Kanal Süzgeç Kümesi Tasarımı,” I. Proc. Signal Processing and Applications, pp.183-188, İstanbul, Turkey, 1993.

6.4 Published Refereed Conference Abstracts:

1. A.N.Akansu, R.A.Haddad, H.Çağlar, “Binomial QMF-Wavelet Transform,” IEEE, DSP workshop, New Plate, New York, pp.6.10.1-2, Sept. 1990.
2. A.N.Akansu, R.A.Haddad, H.Çağlar, “An Efficient QMF-Wavelet Structure,” Symposium on Multi-Resolution Signal Decomposition Techniques: Waveletes, Subbands, and Transforms, NSF/CBMS Conference on Wavelets, University of Lowell, MA, June 1990, Presentation only.

6.5 Published Technical Reports:

1. T.Köprülü, A.Genç, H.Çağlar, F.Yarman, “Ulusal Güvenlik Politikası ve Güvenlik Stratejisi İhtiyaçlarının Bilgi Devrimindeki Gelişmeye Bağlı Olarak Karşılabilme Derecesi”, Harp Akademileri, Mart 2005.
2. H.Çağlar, “Bilgi Harbi ve Savunma Bilgi Sistemlerinde Bilgi Güvenliği”, Savunma Sempozyumu-SSM, pp.103-111 Kasım 2002.
3. H.Çağlar, “Bilgi Harbi ve Savunma Bilgi Sistemlerinde Bilgi Güvenliği,” SAVTEK, Temmuz 2002.
4. H.Çağlar, “Savunma Sanayii Açısından Ulusal Yazılım ve Sistem Entegrasyonu Kabiliyetinin Stratejik Önemi”, SASAD, Mayıs 2002.
5. H.Çağlar, M.Hiroğlu, N.Kıvanç, E.Anarım, “Automatic Textile Quality Inspection Systems and Algorithms,” Marmara Research Center Technical Reports, 1994.