

Associate Professor Ilker Hamzaoglu, IEEE Senior Member

Faculty of Engineering and Natural Sciences
Sabanci University
Orhanli, Tuzla, 34956 Istanbul, Turkey

Phone: +90 (216) 483-9577
Email: hamzaoglu@sabanciuniv.edu
Web: <http://people.sabanciuniv.edu/hamzaoglu>

EDUCATION

PhD, 9/1999, Computer Science, University of Illinois at Urbana-Champaign, USA
Thesis: Test Pattern Generation and Test Application Time Reduction Algorithms for VLSI Circuits
GPA: 4 (over 4)

MS, 7/1993, Computer Engineering, Bogazici University, Istanbul, Turkey
Thesis: Machine Translation from Turkish to Other Turkic Languages
GPA: 4 (over 4), Rank: 1st in the Department

BS, 7/1991, Computer Engineering, Bogazici University, Istanbul, Turkey
GPA: 3.66 (over 4), High Honor Student, Rank: 1st in the Department

High School, 6/1986, Affan Kitapcioglu High School, Trabzon, Turkey
GPA: 9.88 (over 10), Rank: 1st in the School

WORK EXPERIENCE

9/2003 - present, Faculty Member
Faculty of Engineering & Natural Sciences, Sabanci University, Istanbul, Turkey

12/2002 - 8/2003, Principle Staff Engineer (E11)
8/1999 - 11/2002, Senior Staff Engineer (E10)
Multimedia Architecture Lab, Motorola Inc., Schaumburg, IL, USA

Summer 1998 and Summer 1999, Visiting Lecturer
Department of Computer Science, University of Illinois at Urbana-Champaign, IL, USA

6/1996 - 9/1996, Staff Research Assistant
Computational Science Methods Group, X Division, Los Alamos National Laboratory, NM, USA

1/1994 - 7/1999, Teaching and Research Assistant
Computer Science and Electrical and Computer Engineering Departments, University of Illinois at Urbana-Champaign, IL, USA

9/1991 - 7/1993, Teaching and Research Assistant
Department of Computer Engineering, Bogazici University, Istanbul, Turkey

RESEARCH INTERESTS

Low Power Digital Hardware Design for Video Processing and Compression, System-on-Chip (SoC) ASIC and FPGA Design, Embedded System Design, Computer-Aided Design and Test for Digital VLSI Circuits

RESEARCH EXPERIENCE

I founded SoC Design & Test Lab (<http://labs.sabanciuniv.edu/soclab>) at Sabanci University.

Completed Projects

Project: Low Power High Performance HEVC Video Compression Hardware Designs
Supported by TUBITAK (The Scientific and Technological Research Council of Turkey), EEEAG 115E290

Duration: September 2015 - August 2017

Budget: \$110,000

Contribution: I directed this research project and 3 graduate students worked under my supervision. We designed and implemented low power high performance HEVC video compression hardware.

Project: Low Power Motion Estimation Hardware Design for H.264 Multiview Video Coding

Supported by TUBITAK, EEEAG 111E013

Duration: September 2011 - August 2013

Budget: \$75,000

Contribution: I directed this research project and 2 graduate students worked under my supervision. We designed and implemented H.264 multiview video coding motion estimation hardware. We developed low power techniques for these motion estimation hardware and assessed their impact on power consumption.

Project: Low Power Motion Estimation Hardware Design for Video Compression and Frame Rate Conversion

Supported by TUBITAK, EEEAG 108E239

Duration: February 2009 - April 2011

Budget: \$100,000

Contribution: I directed this research project and 2 graduate students worked under my supervision. We designed and implemented motion estimation hardware for video compression and frame rate conversion. We developed low power techniques for reducing the power consumptions of these motion estimation hardware and assessed their impact on the power consumption.

Project: Low Complexity Motion Estimation Techniques and Their SoC Implementation

Partners: Kocaeli University, Turkey and Seoul National University, Korea

Supported by TUBITAK and Korea Research Foundation (KRF), EEEAG 107E179

Duration: March 2008 - February 2010

Budget for Sabanci University: \$50,000

Contribution: I worked as a researcher in this project and 1 graduate student in Sabanci University worked under my supervision. Sabanci University was responsible for developing efficient SoC implementations for the low complexity motion estimation techniques developed by our partners.

Project: Low Power H.264 Video Encoder Design for Portable Applications

Supported by TUBITAK, EEEAG 106E153

Duration: February 2007 - January 2009

Budget: \$120,000

Contribution: I directed this research project and 3 graduate students worked under my supervision. We designed and implemented additional hardware modules, such as mode decision and motion compensation, and built a complete baseline H.264 video encoder system by integrating them to the existing H.264 intra frame coder system. We developed low power techniques for reducing the power consumption of this H.264 video encoder and assessed their impact on its power consumption.

Project: H.264 Video Encoder Hardware Design

Supported by Sabanci University, Istanbul, Turkey

Duration: July 2004 - August 2006

Budget: \$70,000

Contribution: I directed this research project and 5 graduate students worked under my supervision. We designed and implemented a baseline H.264 intra frame coder system. The hardware is implemented in Verilog HDL. The system also includes a software running on an Arm926EJS processor for implementing pre-processing and post-processing functions. The H.264 intra frame coder system is verified to work correctly on an Arm Versatile Platform development board with a Xilinx Virtex II FPGA. We also designed and implemented a sub-pixel accurate H.264 variable block size motion estimation hardware.

5/1997 - 7/1999, Research Assistant

Center for Reliable & High-Performance Computing, University of Illinois at Urbana-Champaign

Project: Test Generation and Test Application Time Reduction Algorithms for VLSI Circuits

Supported by SRC and DARPA

Contribution: I developed new efficient deterministic test pattern generation techniques for combinational and sequential VLSI circuits, new compact test set generation algorithms for combinational circuits under the stuck at, transition delay and CMOS stuck-open fault models, a new design-for-testability technique for reducing the test application time for both standalone and embedded full scan circuits, and a new technique for reducing the test application time for BIST test pattern generators. I designed a state-of-the-art ATPG software incorporating these techniques and implemented it in C++.

6/1996 - 9/1996, Staff Research Assistant

Computational Science Methods Group, X Division, Los Alamos National Laboratory, NM, USA

Project: PADMA: PARallel Data Mining Agents For Scalable Text Classification

Supported by Caterpillar and Department of Energy

Contribution: I parallelized the sequential implementation of a hierarchical clustering algorithm, designed and implemented the PADMA software in C++ on top of the PPFS software, and carried out performance analysis of the PADMA software on an IBM SP2.

5/1995 - 5/1996, Research Assistant

Department of Computer Science, University of Illinois at Urbana-Champaign, USA

Project: Portable Parallel File System (PPFS)

Supported by NSF

Contribution: I ported the PPFS software written in C++ with MPI library to HP-Convex Exemplar and to PVM library, optimized the PPFS software, designed and implemented prefetching infrastructure and sequential prefetching, conducted input/output performance analysis of a chemistry code running on PPFS on an IBM SP2 and an Intel Paragon using the Pablo performance analysis suite to assess the effectiveness of tuning parallel file system policies to match the application access patterns on application performance.

7/1992 - 7/1993, Research Assistant

Department of Computer Engineering, Bogazici University, Istanbul, Turkey

Project: A Spelling Checker and Corrector for Turkish to be integrated with ALL-IN-1, Digital Equipment Corporation's Office Automation Package

Supported by Digital Equipment Corporation

Contribution: I participated in the design of the software and implemented it in Pascal on an IBM PC and later ported it to a VAX 4000-200.

THESES SUPERVISED

PhD Thesis

4. Low Power Video Processing and Compression Hardware Designs
Ercan Kalali, Sabanci University, (*Expected*) August 2018
3. Power Consumption Reduction Techniques for H.264 Video Compression Hardware
Yusuf Adibelli, Sabanci University, August 2012
First Position: Postdoctoral Researcher, Carnegie Mellon University, Pittsburgh, PA, USA
2. Motion Estimation Based Frame Rate Up-Conversion Hardware Design
Ozgur Tasdizen, Sabanci University, June 2010
First Position: Broadcom, Cambridge, United Kingdom
1. Low Power H.264 Video Compression Hardware Designs
Mustafa Parlak, Sabanci University, February 2009
Mustafa received Gursel Sonmez Research Award from Sabanci University in June 2009
First Position: Postdoctoral Researcher, Georgia Institute of Technology, Atlanta, Georgia, USA

Master Thesis

19. FPGA Implementations of Motion Estimation Algorithms using Vivado High Level Synthesis
Firas Abdul Ghani, Sabanci University, August 2017
First Position: PhD Student, Sabanci University, Istanbul, Turkey
18. High Performance HEVC and FVC Video Compression Hardware Designs
Ahmet Can Mert, Sabanci University, August 2017
First Position: PhD Student, Sabanci University, Istanbul, Turkey
17. High Performance High Quality Image Demosaicing Hardware Designs
Hasan Azgin, Sabanci University, August 2015
First Position: PhD Student, Sabanci University, Istanbul, Turkey
16. Low Energy Motion Estimation Hardware Designs for H.264 Multiview Video Coding
Yusuf Aksehir, Sabanci University, August 2015
First Position: Vestel Electronic, Manisa, Turkey
15. Adaptive Motion Estimation Algorithm and Hardware Designs for H.264 Multiview Video Coding
Kamil Erdayandi, Sabanci University, August 2014
First Position: PhD Student, Bogazici University, Istanbul, Turkey

14. High Performance Image Demosaicing Hardware Designs
Serkan Yalman, Sabanci University, January 2014
First Position: Huawei, Istanbul, Turkey
13. Low Energy HEVC Video Compression Hardware Designs
Ercan Kalali, Sabanci University, August 2013
First Position: PhD Student, Sabanci University, Istanbul, Turkey
12. HEVC Video Compression Hardware Designs
Erdem Ozcan, Sabanci University, August 2013
First Position: TUBITAK BILGEM R&D Center, Kocaeli, Turkey
11. Low Power Frame Rate Up-Conversion Hardware Designs
Zafer Ozcan, Sabanci University, August 2011
First Position: TUBITAK BILGEM R&D Center, Kocaeli, Turkey
10. Low Power Motion Estimation Hardware Designs
Onur Can Ulusel, Sabanci University, August 2010
First Position: PhD Student, Brown University, USA
9. Baseline H.264 Video Encoder Hardware Design
Aydin Aysu, Sabanci University, August 2010
First Position: Vestel Electronic R&D, Istanbul, Turkey
8. High Performance Hardware Architectures for One-Bit Transform Based Motion Estimation
Abdulkadir Akin, Sabanci University, June 2010
Abdulkadir received Gursel Sonmez Research Award from Sabanci University in June 2010
First Position: PhD Student, Ecole Polytechnique Federale de Lausanne, Switzerland
7. An Adaptive True Motion Estimation Algorithm for Frame Rate Up-Conversion and Its Hardware Design
Mert Cetin, Sabanci University, August 2009
First Position: Tart New Media, Istanbul, Turkey
6. Dynamic Power Consumption Estimation and Reduction for Full Search Motion Estimation Hardware
Caglar Kalaycioglu, Sabanci University, July 2009
First Position: CMOSVision, GOSB Technopark, Kocaeli, Turkey
5. Low Power IEEE 802.11n Low-Density Parity Check (LDPC) Decoder Hardware Design
Merve Peyic, Sabanci University, August 2008
First Position: ST Ericsson, Istanbul Design Center, Turkey
4. Sub-pixel Accurate H.264 Motion Estimation Hardware Design
Serkan Oktem, Sabanci University, June 2007
First Position: CMOSVision, GOSB Technopark, Kocaeli, Turkey
3. An Efficient H.264 Intra Frame Coder Hardware Design
Esra Sahin, Sabanci University, August 2006
First Position: ST Microelectronics, Istanbul Design Center, Turkey

2. H.264 Intra Frame Coder System Design
Ozgur Tasdizen, Sabanci University, August 2005
First Position: Vestel Electronic R&D, Istanbul, Turkey

1. H.264 Motion Estimator Design
Sinan Yalcin, Sabanci University, August 2005
First Position: Vestel Electronic R&D, Istanbul, Turkey

INDUSTRIAL EXPERIENCE

Reviewer for TUBITAK (The Scientific and Technological Research Council of Turkey)
Reviewer (7 projects) and Project Monitor (1 project), TUBITAK Industry R&D Projects, 2005-2009

Reviewer for TTGV (Technology Development Foundation of Turkey)
Reviewer (2 projects) and Project Monitor (1 project), TTGV Industry R&D Projects, 2004-2009

Reviewer for TUBITAK, TTGV and TUSIAD (Turkish Industrialists and Businessmen Association)
Technology Awards, 2009

October 2007 - June 2009, Several undergraduate students at Sabanci University did their senior year graduation projects and one graduate student at Sabanci University did his PhD thesis under my supervision in collaboration with Vestek in Istanbul (<http://www.vestek.com.tr> , electronics R&D company owned by Vestel Electronics, the leading consumer electronics company in Turkey) as part of the development of digital video enhancement ICs for their Pixellence LCD TV products (<http://www.vestelpixellence.com/en>).

June 2006 – February 2007, I was the contact person at Sabanci University (SU) for the MEDEA+ 2A103 MIMOWA (MIMO Technologies for Wireless Access) project. MEDEA+ -EUREKA 2365- is the industry-driven pan-European programme for advanced co-operative R&D in microelectronics. SU together with STMicroelectronics in Turkey was a partner in the consortium that prepared MIMOWA project proposal. The project proposal is accepted by MEDEA+. However, since local EUREKA authority in Turkey (TUBITAK) changed its funding policy for University partners, SU could not participate in the project.

12/2002 - 8/2003, Principle Staff Engineer (E11)
9/1999 - 11/2002, Senior Staff Engineer (E10)
Multimedia Architecture Lab, Motorola Inc., Schaumburg, IL, USA

Projects:

1/2003 - 8/2003, SoC ASIC for an Image Processing / Vision Application
Contribution: I participated in the top-level design of this ASIC. I worked on designing an interface for using a special-purpose coprocessor with an Arm core. I designed the overall software architecture of a cycle-accurate simulator for a special purpose on-chip memory subsystem, implemented the cycle-accurate simulator for the special purpose cache in this memory subsystem in C++ and integrated the memory subsystem simulator to the system simulation environment. I worked on designing the memory subsystem using this simulator for performance analysis.

3/2001 - 12/2002, Image Processing Platform SoC ASIC

Contribution: I was responsible for top-level development of this ASIC which included an ARM processor, various accelerators and peripherals. This involved participating in performance analysis and top-level design, implementing top-level RTL in Verilog, working with module designers and reviewing their designs, participating in defining DFT strategy and implementing top-level DFT RTL, synthesizing the top-level design, performing static timing analysis for main modules, writing the top-level testbench and setting up simulation environments, playing a major role in functional and timing design verification, working with physical design team to resolve timing problems, providing support to emulation team, evaluation board designer, and product engineer, generating functional patterns for manufacturing testing, writing test software in C and ARM assembly to verify the system, providing support to software team and debugging software problems with hw/sw co-simulation, participating in setting up the chip debugging environment, writing Verilog RTL for FPGA on the test board, and playing a major role in chip testing and debugging.

9/1999 - 2/2001, MPEG4 Video Codec ASIC

Contribution: I designed two sub-modules in the encoder, implemented them using Verilog HDL, synthesized and verified them. I participated in the design of the encoder module and implemented it using Verilog. I wrote the control software in a 16-bit Risc Cpu assembly language and integrated this with the rest of the encoder software. I verified the encoder module with hardware/software co-simulations.

TEACHING EXPERIENCE

Faculty Member

Electronics Engineering, Sabanci University, Istanbul, Turkey

CS 303 Logic and Digital System Design (Fall 2016, Fall 2017)

EE 310 Hardware Description Languages (15 times in Spring semesters)

EE 401 VLSI System Design I (14 times in Fall semesters)

EE 402 VLSI System Design II (System-on-Chip ASIC Design) (8 times in Spring semesters)

EE 542 Digital Systems Verification and Testing (Spring 2004, Fall 2005, Fall 2007)

EE 634 VLSI Array Processors for Signal Processing (5 times in Fall semesters)

EE 537 Advanced Topics in VLSI Design (Low Power Digital Hardware Design) (Fall 2009, Fall 2012)

EE 580 Special Topics in EE (Video Compression Algorithm and Hardware) (Fall 2011, Fall 2015)

Visiting Lecturer

Department of Computer Science, University of Illinois at Urbana-Champaign, USA

CS231 Computer Architecture I (Summer 1998, Summer 1999)

Teaching Assistant

Department of Computer Science, University of Illinois at Urbana-Champaign, USA

CS225 Data Structures and Software Principles (Summer 1997)

CS333 Computer System Organization (Fall 1996, Spring 1997)

CS348 Introduction to Artificial Intelligence (Fall 1994, Spring 1995)

CS257 Introduction to Numerical Analysis (Spring 1994)

Teaching Assistant

Department of Computer Engineering, Bogazici University, Istanbul, Turkey

CMPE450 Software Engineering (Fall 1991)

CMPE223 Data Structures and Algorithms I (Fall 1991)

CMPE224 Data Structures and Algorithms II (Spring 1992)

CMPE100 Computer Programming (Fall 1992, Spring 1993)

PROFESSIONAL ACTIVITIES

SCI Journals

Senior Editor, IEEE Transactions on Consumer Electronics, January 2017 - December 2019

Associate Editor, IEEE Transactions on Consumer Electronics, July 2011 - December 2016

Associate Editor (2 articles), Turkish Journal of Electrical Engineering and Computer Sciences

Reviewer

IEEE Transactions on Circuits and Systems for Video Technology, IEEE Transactions on Multimedia, IEEE Transactions on Computer-Aided Design, IEEE Design & Test of Computers, IEEE Signal Processing Letters, Journal of Real-Time Image Processing, Microprocessors and Microsystems: Embedded Hardware Design, ACM Transactions on Design Automation, ACM Transactions on Embedded Computing Systems, Integration - The VLSI Journal, Journal of Electronic Testing, Turkish Journal of Electrical Engineering and Computer Sciences

International Conferences

Track Co-Chair, IFIP/IEEE International Conference on VLSI-SoC, October 2013, Istanbul, Turkey

Session Chair

5. IEEE International Conference on Consumer Electronics, January 2018, Las Vegas, NV, USA
4. IFIP/IEEE International Conference on VLSI-SoC, October 2013, Istanbul, Turkey
3. Euromicro Conference on Digital System Design, September 2012, Izmir, Turkey
2. Euromicro Conference on Digital System Design, September 2010, Lille, France
1. International Conference on Pattern Recognition, August 2010, Istanbul, Turkey

Technical Program Committee Member

8. IEEE International Conference on Application-Specific Systems, Architectures and Processors (June 2014, Zurich, Switzerland) , (July 2015, Toronto, Canada) , (July 2016, London, UK)
7. Conference on Design and Architectures for Signal and Image Processing (October 2013, Cagliari, Italy) , (October 2014, Madrid, Spain) , (September 2015, Cracow, Poland) , (October 2016, Rennes, France) , (September 2017, Dresden, Germany)
6. IEEE International Symposium on Consumer Electronics (June 2013, Hsinchu, Taiwan, R.O.C.)
5. Design, Automation & Test in Europe (DATE) Conference (March 2012, Dresden, Germany) , (March 2013, Grenoble, France)
4. International Conference on Field Programmable Logic and Applications (September 2010, Milano, Italy) , (September 2011, Crete, Greece) , (August 2012, Oslo, Norway) , (September 2013, Porto, Portugal), (September 2014, Munich, Germany), (Sept. 2015, London, UK)
3. Euromicro Conference on Digital System Design (September 2010, Lille, France) , (September 2011, Oulu, Finland) , (September 2012, Izmir, Turkey) , (September 2013, Santander, Spain) , (August 2014, Verona, Italy) , (August 2015, Madeira, Portugal) , (August 2016, Limassol, Cyprus)
2. IEEE/IFIP International Symposium on VLSI System-on-Chip (September 2010, Madrid, Spain) , (October 2013, Istanbul, Turkey) , (October 2014, Playa, Mexico)
1. NASA/ESA Conference on Adaptive Hardware and Systems (June 2006, Istanbul, Turkey) , (Aug. 2007, Edinburgh, UK) , (June 2008, Noordwijk, The Netherlands)

Reviewer

Design Automation Conference, Int. Conference on Computer-Aided Design, Int. Test Conference, IEEE VLSI Test Symposium, European Conference on Circuit Theory & Design

National Conferences

Program Co-Chair

Embedded Systems and Applications Symposium, December 2014, Istanbul, Turkey
Embedded Systems and Applications Symposium, November 2012, Istanbul, Turkey

Session Chair

Embedded Systems and Applications Symposium, December 2014, Istanbul, Turkey
Embedded Systems and Applications Symposium, November 2012, Istanbul, Turkey

Technical Program Committee Member

IEEE Signal Processing and Communications Applications Conference
(April 2009, Antalya, Turkey) , (April 2010, Diyarbakir, Turkey) , (April 2011, Antalya, Turkey) ,
(April 2012, Mugla, Turkey)
Embedded Systems and Applications Symposium
(November 2010, Istanbul, Turkey)

National Research Projects

TUBITAK University Research Projects, 2007-2011

Panelist (4 1001 project panels)
Reviewer (2 1002 projects)
Project Monitor (1 1001 project),

Reviewer for Istanbul Technical University Scientific Research Projects, 2009

Sabanci University Activities

Committee Memberships

13. Sabanci University Discipline Court Member, November 2014 - Present
12. Electronics Engineering Program Erasmus Exchange Advisor, January 2016 - Present
11. EE Program Undergrad Major Diploma Advisor, August 2017 - Present
10. EE Program Undergrad Double Major Diploma Advisor, August 2017 - February 2018
9. EE Program Presenter in MJC100 Freshman Course, Fall 2015 - Spring 2017
8. Graduate Applications Organization Committee Member, November 2014 – November 2016
7. Electronics Engineering Graduate Seminar Coordinator, August 2012 – June 2014
6. Curriculum Committee Member, November 2011 – July 2012
5. PhD Qualification Exam Committee Member, November 2008 – September 2010
4. Proj102 Freshman Project Course Committee Member, Fall 2006 – Spring 2007
3. Proj102 Freshman Project Course Coordinator, Fall 2005 – Spring 2006
2. Electronics Engineering (EE) Program Co-Coordinator, April 2006 – October 2008
1. Microelectronics Program Coordinator, March 2004 – March 2006

Other Activities, September 2003 - Present

8. Participated in EE Program Activities such as MUDEK Accreditation Process, Education and Research Planning, Faculty Member and Graduate Student Recruitment
7. Thesis Defense Committee Member of Many MS and PhD Students
6. Written and Oral Qualification Exam Committee Member of Many PhD Students
5. Wrote Reference Letters for Many Undergraduate and Graduate Students
4. Senior Graduation Project Supervisor of Many Undergraduate Students
3. Summer Internship Advisor of Many Undergraduate Students
2. Proj102 Freshman Project Supervisor of Many Undergraduate Students
1. Advisor of Many Undergraduate Students

Various Activities

I participated to the invitation only annual Academic Reputation Survey by Thomson Reuters and Times Higher Education in 2012, 2015 which supports Times Higher Education World University Rankings.

Committee Member for Electronics and Communication Engineering Department, Istanbul Technical University

Thesis Defense Committee of 1 MS student, 2014

Committee Member for Electrical and Electronics Engineering Department, Bogazici University

Thesis Defense Committee of 1 MS student, 2008

Qualification Exam Committee of 2 PhD students, 2008-2010

Committee Member for Electronics and Telecommunications Engineering Department, Kocaeli University

Thesis Defense Committee of 2 PhD students, 2008-2009

Qualification Exam Committee of 1 PhD student, 2009

Member of Fellowships, Assistantships, and Admissions Committee, Department of Computer Science, University of Illinois at Urbana-Champaign, 1996-1997

AWARDS and HONORS

My publications received 2370 citations with an h-index of 22 according to Google Scholar, May 2018

Invited Keynote Speaker, 11th IEEE International Conference on Design & Technology of Integrated Systems, April 2016, Istanbul, Turkey

IEEE Senior Member, July 2012

Listed in Marquis Who's Who in Science and Engineering, 2011-2012

Listed in Marquis Who's Who in the World, 2010-2012

Best Paper Award in Adaptive and Reconfigurable Circuits for Multimedia Category in NASA/ESA Conference on Adaptive Hardware and Systems, August 2007, Edinburgh, Scotland, UK

Bravo Awards for outstanding contributions to MPEG4 Video Codec ASIC and Image Processing Platform SoC ASIC, Motorola Labs, Illinois, USA, 2001 and 2002

W. J. Poppelbaum Memorial Award for Excellent Research in Computer Hardware, Department of Computer Science, University of Illinois at Urbana-Champaign, 1999

TUBITAK NATO Science Fellowship Award for Graduate Studies in USA, 1993

Undergraduate Education Scholarship from Istanbul Chamber of Industry, 1988-1991

Excellence Scholarship from AY-TEST Periodical (because of my score in the University Entrance Exam), 1986

Scored 664.138 in Mathematics and Natural Sciences (which was enough to register to any Department in Engineering and Medicine in all Universities in Turkey) in the University Entrance Exam in Turkey, 1986

Incitement Award in Mathematics Competition organized by TUBITAK among High School Senior Students in Turkey, 1986

REFEREED PUBLICATIONS

SCI JOURNALS

27. Hasan Azgin, Ahmet Can Mert, Ercan Kalali, Ilker Hamzaoglu
Reconfigurable Intra Prediction Hardware for Future Video Coding
IEEE Transactions on Consumer Electronics, vol. 63, no. 4, Nov. 2017
26. Ercan Kalali, Ilker Hamzaoglu
Low Complexity 2D Adaptive Image Processing Algorithm and Its Hardware Implementation
IEEE Transactions on Consumer Electronics, vol. 63, no. 3, August 2017
25. Ahmet Can Mert, Ercan Kalali, Ilker Hamzaoglu
High Performance 2D Transform Hardware for Future Video Coding
IEEE Transactions on Consumer Electronics, vol. 63, no. 2, May 2017
24. Hasan Azgin, Ercan Kalali, Ilker Hamzaoglu
A Computation and Energy Reduction Technique for HEVC Intra Prediction
IEEE Transactions on Consumer Electronics, vol. 63, no. 1, February 2017
23. Ercan Kalali, Ahmet Can Mert, Ilker Hamzaoglu
A Computation and Energy Reduction Technique for HEVC Discrete Cosine Transform
IEEE Transactions on Consumer Electronics, vol. 62, no. 2, May 2016
22. Ercan Kalali, Yusuf Adibelli, Ilker Hamzaoglu
A Low Energy Intra Prediction Hardware for High Efficiency Video Coding
Journal of Real-Time Image Processing, December 2014

21. Erdem Ozcan, Ercan Kalali, Yusuf Adibelli, Ilker Hamzaoglu
A Computation and Energy Reduction Technique for HEVC Intra Mode Decision
IEEE Transactions on Consumer Electronics, vol. 60, no. 4, November 2014
20. Ercan Kalali, Erdem Ozcan, Ozgun Mert Yalcinkaya, Ilker Hamzaoglu
A Low Energy HEVC Inverse Transform Hardware
IEEE Transactions on Consumer Electronics, vol. 60, no. 4, November 2014
19. Yusuf Aksehir, Kamil Erdayandi, Zafer Ozcan, Ilker Hamzaoglu
A Low Energy Adaptive Motion Estimation Hardware for H.264 Multiview Video Coding
Journal of Real-Time Image Processing, December 2013
18. Erdem Ozcan, Yusuf Adibelli, Ilker Hamzaoglu
A High Performance Deblocking Filter Hardware for High Efficiency Video Coding
IEEE Transactions on Consumer Electronics, vol. 59, no. 3, August 2013
17. Merve Peyic, Hakan Baba, Erdem Guleyuboglu, Ilker Hamzaoglu, Mehmet Keskinoz
A Low Power Multi-Rate Decoder Hardware for IEEE 802.11n LDPC Codes
Microprocessors Microsystems: Embedded Hardware Design, vol. 36, issue 3, pp. 159-166, May 2012
16. Yusuf Adibelli, Mustafa Parlak, Ilker Hamzaoglu
Computation and Power Reduction Techniques for H.264 Intra Prediction
Microprocessors Microsystems: Embedded Hardware Design, vol. 36, issue 3, pp. 205-214, May 2012
15. Abdulkadir Akin, Mert Cetin, Zafer Ozcan, Burak Erbagci, Ilker Hamzaoglu
An Adaptive Bilateral Motion Estimation Algorithm and its Hardware Architecture
IEEE Transactions on Consumer Electronics, vol. 58, no. 2, May 2012
14. Yusuf Adibelli, Mustafa Parlak, Ilker Hamzaoglu
Energy Reduction Techniques for H.264 Deblocking Filter Hardware
IEEE Transactions on Consumer Electronics, vol. 57, no. 3, August 2011
13. Aydin Aysu, Gokhan Sayilar, Ilker Hamzaoglu
A Low Energy Adaptive Hardware for H.264 Multiple Reference Frame Motion Estimation
IEEE Transactions on Consumer Electronics, vol. 57, no. 3, August 2011
12. Mert Cetin and Ilker Hamzaoglu
An Adaptive True Motion Estimation Algorithm for Frame Rate Conversion of High Definition Video
and Its Hardware Implementations
IEEE Transactions on Consumer Electronics, vol. 57, no. 2, May 2011
11. Yusuf Adibelli, Mustafa Parlak, Ilker Hamzaoglu
Pixel Similarity Based Computation and Power Reduction Technique for H.264 Intra Prediction
IEEE Transactions on Consumer Electronics, vol. 56, no. 2, pp. 1079-1087, May 2010
10. Abdulkadir Akin, Gokhan Sayilar, Ilker Hamzaoglu
High Performance Hardware Architectures for One Bit Transform Based Single and Multiple Reference
Frame Motion Estimation
IEEE Transactions on Consumer Electronics, vol. 56, no. 2, pp. 1144-1152, May 2010

9. Ozgur Tasdizen, Halil Kukner, Abdulkadir Akın, Ilker Hamzaoglu
Dynamically Variable Step Search Motion Estimation Algorithm and a Dynamically Reconfigurable Hardware for Its Implementation
IEEE Transactions on Consumer Electronics, vol. 55, no. 3, pp. 1645-1653, August 2009
8. Anil Celebi, Oguzhan Urhan, Ilker Hamzaoglu, Sarp Erturk
Efficient Hardware Implementations of Low Bit Depth Motion Estimation Algorithms
IEEE Signal Processing Letters, vol. 16, no. 6, pp. 513-516, June 2009
7. Abdulkadir Akın, Yigit Dogan, Ilker Hamzaoglu
High Performance Hardware Architectures for One Bit Transform Based Motion Estimation
IEEE Transactions on Consumer Electronics, vol. 55, no. 2, pp. 941-949, May 2009
6. Anil Celebi, Orhan Akbulut, Oguzhan Urhan, Ilker Hamzaoglu, Sarp Erturk
An All Binary Sub-Pixel Motion Estimation Approach and its Hardware Architecture
IEEE Transactions on Consumer Electronics, vol. 54, no. 4, pp. 1928-1937, November 2008
5. Mustafa Parlak, Yusuf Adibelli, Ilker Hamzaoglu
A Novel Computational Complexity and Power Reduction Technique for H.264 Intra Prediction
IEEE Transactions on Consumer Electronics, vol. 54, no. 4, pp. 2006-2014, November 2008
4. Ilker Hamzaoglu, Ozgur Tasdizen, Esra Sahin
An Efficient H.264 Intra Frame Coder System
IEEE Transactions on Consumer Electronics, vol. 54, no. 4, pp. 1903-1911, November 2008
3. Mustafa Parlak and Ilker Hamzaoglu
Low Power H.264 Deblocking Filter Hardware Implementations
IEEE Transactions on Consumer Electronics, vol. 54, no. 2, pp. 808-816, May 2008
2. Ilker Hamzaoglu and Janak H. Patel
Test Set Compaction Algorithms for Combinational Circuits
IEEE Transactions on Computer-Aided Design, vol. 19, no. 8, pp. 957-963, August 2000
1. Ilker Hamzaoglu and Janak H. Patel
New Techniques for Deterministic Test Pattern Generation
Journal of Electronic Testing, vol. 15, no. 1/2, pp. 63-73, October 1999

BOOK CHAPTERS

1. Ilker Hamzaoglu and Huseyin Simitci
Performance Analysis of Tape Libraries for Supercomputing Environments
High Performance Computing Systems and Applications
Chapter 54, Pages 559-574, ISBN 978-0-7923-7774-0, Springer, 2002

INTERNATIONAL CONFERENCES

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