Oğuz Ergin

TOBB University of Economics and Technology, Department of Computer Engineering, Söğütözü Cad. No: 43, Söğütözü, Ankara / Turkey
e-mail: oergin@etu.edu.tr **Tel:** +90 312 292 4059 (work) **Url:** http://oergin.etu.edu.tr

1 EDUCATION

- **Doctor of Philosophy (PhD)**   Computer Science, **State University of New York - Binghamton**, New York, USA   May 2005
  Ph.D. Dissertation Title: "Register File Optimizations for Superscalar Microprocessors", Ph.D. Advisor: Prof. Kanad Ghose

- **Master of Science (MS)**   Computer Science, **State University of New York - Binghamton**, New York, USA   May 2003
  M.S Thesis Title: "Circuit Techniques for Power-Aware Microprocessors", M.S. Advisor: Prof. Kanad Ghose

- **Bachelor of Science (BS)**   Electrical and Electronics Engineering, **Middle East Technical University**, Ankara, Turkey   June 2000

2 EMPLOYMENT HISTORY

2.1 Academic History

- **TOBB University of Economics and Technology**, Ankara, Turkey
  - **President's Office**
    - **Adviser to the President - Strategic Planning**   (January'15   –   current)
                                                                          (April'13   –   August'13)
  - **Department of Computer Engineering**
    - **Associate Professor**   (April'11   –   current)
    - **Coordinator of Double Major and Minor Programs**   (June'08   –   June'12)
    - **Assistant Professor**   (June'06   –   April'11)
    - **Lecturer**   (December'05 –   June'06)
  - **Faculty of Engineering**
    - **Advisory Board Member of Mechatronics Minor Program**   (April'13   –   current)
    - **Representative of Assistant Professors in the Faculty Commission** (July'08   –   August'11)
  - **Graduate School of Science and Engineering**
    - **Vice Director**   (December'11 –   July'13)
  - **Commission Duty**
    - **Member of the University Processes Commission**   (November'10 –   September'11)
    - **Member of the Cooperative Education Commission**   (October'09   –   June'10)
  - **Software Development Coordinator**   (August'07   –   May'08)

- **University of Edinburgh**, Edinburgh, UK
  - **School of Informatics - Institute for Computing Systems Architecture**
    - **Research Associate**   (May'15   –   current)

- **University of Notre Dame**, Indiana, USA
  - **Department of Computer Science and Engineering**
    - **Visiting Associate Professor**   (January'14   –   December'14)

- **State University of New York (SUNY) - Binghamton**, New York, USA
  - **Department of Computer Science and Engineering**
    - **Research Assistant**   (June'01   –   August'04)
    - **Teaching Assistant**   (January'01   –   June'04)
      - CS210 – Logic Design
      - CS325 – Computer Organization and Design
      - CS522 – Computer Architecture and Organization

2.2 Industry History

- **Global Supercomputing Corporation,** Eskişehir, Turkey
  - **Consultant and Hardware Design Team Lead**   (October'07   –   January'09)

- **Intel Barcelona Research Center (IBRC)**, Barcelona, Spain
  - **Senior Research Scientist**   (September'04 –   November'05)

- **ASELSAN (Military Electronics Industries)**, Ankara, Turkey
  - **Intern,** Thermal Camera Development Group   (August'99   –   September'99)

- **TAI (Turkish Aerospace Industries)**, Ankara, Turkey
  - **Intern,** R&D Department Avionics Group   (August'98   –   September'98)

2.3 Entrepreneurship History

- **Kasırga Information Systems Ltd.,** Ankara, Turkey
  - **Founder and CEO**   (January'09   –   current)
    - Small and Medium Enterprises Development Organization (KOSGEB) (10.000 TL support from the Turkish government)

- **Yumruk Space and Defense Ltd.,** Ankara, Turkey
  - **Founder and CEO**   (March'10   –   May'15)
    - Supported by the Ministry of Industry (100.000 TL for the first year)

3 PUBLICATIONS

3.1 Book

1. "Java: Bilgisayar Programlamaya Giriş" [In Turkish; Title means: "Java: Introduction to Computer Programming"]
Ali Yazıcı, Erdoğan Doğdu, A. Murat Özbayoğlu, Y. Murat Erten, **Oğuz Ergin**
Palme Yayıncılık, 2007. ISBN: 978–9944–341–57–8.

3.2 Journal Publications

1. "Exploiting Existing Copies in Register File for Soft Error Correction"
Abdulaziz Eker, **Oğuz Ergin**
IEEE Computer Architecture Letters **(CAL)**, to appear.

2. "Exploiting Existing Comparators for Fine-Grained Low-Cost Error Detection"
Gülay Yalçın, **Oğuz Ergin**, Emrah İşlek, Osman Ünsal, Adrian Cristal
ACM Transactions on Architecture and Code Optimization **(TACO)**, Vol.11, No.3, October 2014, Article No. 32.

3. "Bit Impact Factor: Towards Making Fair Vulnerability Comparison"
Serdar Zafer Can, Gülay Yalçın, **Oğuz Ergin**, Osman Ünsal, Adrian Cristal
Elsevier Microprocessors and Microsystems **(MICPRO)**, Vol.38, No. 6, August 2014, pp.598-604.

4. "Exploiting Processor Features to Implement Error Detection in Reduced Precision Matrix Multiplications"
Pedro Reviriego, Serdar Zafer Can, Çağrı Eryılmaz, Juan Antonio Maestro, **Oğuz Ergin**
Elsevier Microprocessors and Microsystems **(MICPRO)**, Vol.38, No. 6, August 2014, pp.581-684.

5. "Exploiting Virtual Addressing for Increasing Reliability"
Yaman Çakmakçı, **Oğuz Ergin**
IEEE Computer Architecture Letters **(CAL)**, Vol.13, No.1, January-June 2014, pp.29-32.

6. "Enhanced Duplication: a Technique to Correct Soft Errors in Narrow Values"
İbrahim Burak Karslı, Pedro Reviriego, Muhammed Fatih Ballı, **Oğuz Ergin**, Juan Antonio Maestro
IEEE Computer Architecture Letters **(CAL)**, Vol.12, No.1, January-June 2013, pp.13-16.

7. "Reducing the Energy Dissipation of the Issue Queue by Exploiting Narrow Immediate Operands"
İlknur Cansu Kaynak, Yusuf Onur Koçberber, **Oğuz Ergin**
Journal of Circuits, Systems and Computers **(JCSC)**, Vol. 19, No. 8, December 2010.

8. "Energy-Efficient Register Caching with Compiler Assistance"
Timothy Jones, Michael O'Boyle, Jaume Abella, Antonio González, **Oğuz Ergin**
ACM Transactions on Architecture and Code Optimization **(TACO)**, Vol. 6, Issue 4, Article No. 13, October 2009.

9. "Exploiting Narrow Values for Faster Parity Generation"
Yusuf Onur Koçberber, Yusuf Osmanlıoğlu, **Oğuz Ergin**
Microelectronics International, Vol. 26, Issue 3, 2009, pp.22-29.

10. "Modifying Data-Holding Components of the Processors for Energy Efficiency"
Yusuf Osmanlıoğlu, Yusuf Sinan Hanay, **Oğuz Ergin**
Journal of Circuits, Systems and Computers **(JCSC)**, Vol.18, No.6, October 2009.

11. "Exploring the Limits of Early Register Release: Exploiting Compiler Analysis"
Timothy Jones, Michael O'Boyle, Jaume Abella, Antonio González, **Oğuz Ergin**
ACM Transactions on Architecture and Code Optimization **(TACO)**, Vol. 6, Issue 3, Article No. 12, September 2009.

12. "Reducing Soft Errors through Operand Width Aware Policies"
Oğuz Ergin, Osman Ünsal, Xavier Vera, Antonio González
IEEE Transactions on Dependable and Secure Computing **(TDSC)**, Vol. 6, No. 3, July/September 2009, pp.217-230.

13. "Refueling: A Technique to Avoid Wire Degradation due to Electromigration"
Jaume Abella, Xavier Vera, Osman Ünsal, **Oğuz Ergin**, Antonio González, James W. Tschanz
IEEE Micro Magazine **(MICRO)**, Vol. 28, No. 6, November/December 2008, pp.37-46.

14. "Using Tag-Match Comparators for Detecting Soft Errors"
Gülay Yalçın, **Oğuz Ergin**
IEEE Computer Architecture Letters **(CAL)**, Vol. 6, Issue 2, October 2007, pp.53-56.

15. "Impact of Parameter Variations on Circuits and Microarchitecture"
Osman Ünsal, James W. Tschanz, Keith Bowman, Vivek De, Xavier Vera, Antonio González, **Oğuz Ergin**
IEEE Micro Magazine **(MICRO)**, Vol. 26, No. 6, November/December 2006, pp.30-39.

16. "Early Register Deallocation Mechanisms Using Checkpointed Register Files"
Oğuz Ergin, Deniz Balkan, Dmitry Ponomarev, Kanad Ghose
IEEE Transactions on Computers **(TC)**, Vol. 55, No. 9, September 2006, pp.1153-1166.

17. "Exploiting Narrow Values for Soft Error Tolerance"
Oğuz Ergin, Osman Ünsal, Xavier Vera, Antonio González
IEEE Computer Architecture Letters **(CAL)**, Vol. 5, Issue 2, June 2006.

18. "Instruction Packing: Towards Fast and Energy Efficient Instruction Scheduling"
Joseph Sharkey, Dmitry Ponomarev, Kanad Ghose, **Oğuz Ergin**
ACM Transactions on Architecture and Code Optimization **(TACO)**, Vol. 2, Issue 3, June 2006, pp.156-181.

19. "Reducing the Power Dissipation of Register Alias Tables in High-Performance Processors"
Gürhan Küçük, **Oğuz Ergin**, Dmitry Ponomarev, Kanad Ghose
IEE Proceedings on Computers and Digital Techniques **(PCDT)**, Vol. 152, Issue 6, November 2005, pp.739-746.

20. "Energy-Efficient Comparators for Superscalar Datapaths"
Dmitry Ponomarev, Gürhan Küçük, **Oğuz Ergin**, Kanad Ghose
IEEE Transactions on Computers **(TC)**, Vol. 53, No. 7, July 2004, pp.892-904.

21. "Isolating Short-Lived Operands for Energy Reduction"
Dmitry Ponomarev, Gürhan Küçük, **Oğuz Ergin**, Kanad Ghose
IEEE Transactions on Computers **(TC)**, Vol. 53, No. 6, June 2004, pp.697-709.

22. "Complexity-Effective Reorder Buffer Designs for Superscalar Processors"
Gürhan Küçük, Dmitry Ponomarev, **Oğuz Ergin**, Kanad Ghose
IEEE Transactions on Computers **(TC)**, Vol. 53, No. 6, June 2004, pp.653-665.

23. "Energy-Efficient Issue Queue Design"
Dmitry Ponomarev, Gürhan Küçük, **Oğuz Ergin**, Kanad Ghose, Peter Kogge
IEEE Transactions on Very Large Scale Integration (VLSI) Systems **(TVLSI)**, Vol. 11, No 5, October 2003, pp.789-800.

3.3 Conference and Workshop Publications

1. "Using Value Similarity of Registers for Soft Error Mitigation"
Abdulaziz Eker, **Oğuz Ergin**
28th Defect and Fault Tolerance in VLSI and Nanotechnology Systems Symposium **(DFTS'15)**, Amherst, Massachusetts, USA, October 2015, to appear.

2. "User Specific Skin Temperature-Aware DVFS for Smartphones"
Begüm Birsen Eğilmez, Gökhan Memik, Seda Öğrenci-Memik, **Oğuz Ergin**
18th Design, Automation and Test in Europe **(DATE'15)**, Grenoble, France, March 2015.

3. "Exploiting a Fast and Simple ECC for Scaling Supply Voltage in Level-1 Caches"
Gülay Yalçın, Adrian Cristal, Osman S. Ünsal, **Oğuz Ergin**, Emrah İşlek, Öykü Tozlu, Pedro Reviriego,
20th IEEE International On-Line Testing Symposium **(IOLTS'14)**, Catalunya, Spain, July 2014.

4. "Improving the Reliability of Skewed Caches through ECC based Hashes"
Sercan Yeğin, İbrahim Burak Karslı, **Oğuz Ergin**, Marco Ottavi, Salvatore Pontarelli, Pedro Reviriego
3rd Workshop on Manufacturable and Dependable Multicore Architectures at Nanoscale **(MEDIAN'14)**, Dresden, Germany, March 2014.

5. "GPU Based Parallel Image Processing Library for Embedded Systems"
Mustafa Çavuş, Hakkı Doğaner Sümerkan, Osman Seçkin Şimşek, Hasan Hassan, Abdullah Giray Yağlıkçı, **Oğuz Ergin**
9th International Conference on Computer Vision Theory and Applications **(VISAPP'13)**, Lisbon, Portugal, January 2014.

6. "Adapting the Columns of Storage Components for Lower Static Energy Dissipation"
Mehmet Burak Aykenar, Muhammet Özgür, Osman Seçkin Şimşek, **Oğuz Ergin**
21st IFIP/IEEE International Conference on Very Large Scale Integration **(VLSI-SoC'13)**, Istanbul, Turkey, October 2013.

7. "Exploiting Replicated Checkpoint for Soft Error Detection and Correction"
Fahrettin Koç, Kenan Bozdaş, İbrahim Burak Karslı, **Oğuz Ergin**
16th Design, Automation and Test in Europe **(DATE'13)**, Grenoble, France, March 2013.

8. "Exploiting Bus Level and Bit Level Inactivity for Preventing Wire Degradation due To Electromigration"
Mehmet Kayaalp, Fahrettin Koç, **Oğuz Ergin**
15th Euromicro Symposium on Digital System Design **(DSD'12)**, Izmir, Turkey, September 2012.

9. "Improving the Soft Error Resilience of the Register Files Using SRAM Bitcells with Builtin Comparators"
Mehmet Kayaalp, Fahrettin Koç, **Oğuz Ergin**
15th Euromicro Symposium on Digital System Design **(DSD'12)**, Izmir, Turkey, September 2012.

10. "Global Co-op: Engineering Education through Outsourcing"
Oğuz Ergin, Utku Diril, Wei-Jin Dai
2nd Interdisciplinary Engineering Design Education Conference **(IEDEC'12)**, Santa Clara, California, USA, March 2012.

11. "Tag Simplification: Achieving Power Efficiency through Reducing the Complexity of the Wakeup Logic"
Mehmet Burak Aykenar, Muhammet Özgür, Vehbi Eşref Bayraktar, **Oğuz Ergin**
2nd International Conference on Energy Aware Computing **(ICEAC'11)**, Istanbul, Turkey, December 2011.

12. "Using Content-Aware Bitcells to Reduce Static Energy Dissipation"
Fahrettin Koç, Osman Seçkin Şimşek, **Oğuz Ergin**
29th International Conference on Computer Design **(ICCD'11)**, Amherst, Massachusetts, USA, October 2011, pp.51-56.

13. "Dynamic Register File Partitioning in Superscalar Microprocessors for Energy Efficiency"
Meltem Özsoy, Yusuf Onur Koçberber, Mehmet Kayaalp, **Oğuz Ergin**
28th International Conference on Computer Design **(ICCD'10)**, Amsterdam, Netherlands, October 2010, pp.515-520.

14. "Complexity-Effective Rename Table Design for Rapid Speculation Recovery"
Görkem Aşılıoğlu, Emine Merve Kaya, **Oğuz Ergin**
23th Conference on Architecture of Computing Systems **(ARCS'10)**, Hannover, Germany, February 2010, pp.15-24.

15. "Exploiting Inactive Rename Slots for Detecting Soft Errors"
Mehmet Kayaalp, **Oğuz Ergin**, Osman Ünsal, Mateo Valero
23th Conference on Architecture of Computing Systems **(ARCS'10)**, Hannover, Germany, February 2010, pp.126-137.

16. "Reducing Parity Generation Latency through Input Value Aware Circuits"
    Yusuf Osmanlıoğlu, Yusuf Onur Koçberber, **Oğuz Ergin**
    19th ACM Great Lakes Symposium on VLSI **(GLSVLSI'09)**, Boston, Massachusetts, USA, May 2009, pp.109-112.

17. "Exploiting Register Renaming Logic for Soft Error Detection"
    Oğuz Ergin, Gülay Yalçın, Osman Ünsal, Mateo Valero
    1st Workshop on Design for Reliability **(DFR'09)**, Paphos, Southern Cyprus, January 2009.

18. "Evaluating the Effects of Compiler Optimizations on AVF"
    Timothy Jones, Michael O'Boyle, **Oğuz Ergin**
    12nd Annual Workshop on the Interaction between Compilers and Computer Architecture **(INTERACT'08)**, Salt Lake City, Utah, USA, February 2008.

19. "Fuse: A Technique to Anticipate Failures due to Degradation in ALUs"
    Xavier Vera, Jaume Abella, Osman Ünsal, **Oğuz Ergin**, Antonio González
    13th IEEE International On-Line Testing Symposium **(IOLTS'07)**, Crete, Greece, July 2007.

20. "Designing Efficient Processors Using Compiler-Directed Optimisations"
    Timothy Jones, Michael O'Boyle, Jaume Abella, Antonio González, **Oğuz Ergin**
    11th Annual Workshop on the Interaction between Compilers and Computer Architecture **(INTERACT'07)**, Phoenix, Arizona, USA, February 2007.

21. "Exploiting Narrow Values for Energy Efficiency in the Register Files of Superscalar Microprocessors"
    Oğuz Ergin
    16th International Workshop on Power and Timing Modeling, Optimization and Simulation **(PATMOS'06)**
    Lecture Notes in Computer Science, (LNCS 4148), Springer-Verlag, 2006, pp.477-485

22. "Empowering a Helper Cluster through Data-Width Aware Instruction Selection Policies"
    Osman Ünsal, **Oğuz Ergin**, Xavier Vera, Antonio González
    International Parallel and Distributed Processing Symposium **(IPDPS'06)**, Rhodes, Greece, April 2006.

23. "Checker Backend for Soft and Timing Error Detection and Recovery"
    Xavier Vera, Jaume Abella, Osman Ünsal, Antonio González, **Oğuz Ergin**
    2nd Workshop on System Effects of Logic Soft Errors **(SELSE 2)**, Urbana-Champaign, Illinois, USA, April 2006.

24. "Power-Efficient Wakeup Tag Broadcast"
    Joseph Sharkey, Dmitry Ponomarev, Kanad Ghose, **Oğuz Ergin**
    23rd International Conference on Computer Design **(ICCD'05)**, San Jose, USA, October 2005, pp.654-661.

25. "Compiler Directed Early Register Release"
    Timothy Jones, Michael O'Boyle, Jaume Abella, Antonio González, **Oğuz Ergin**
    14th International Conference on Parallel Architectures and Compilation Techniques **(PACT'05)**, Saint Louis, USA, September 2005, pp.110-119.

26. "Instruction Packing: Reducing Power and Delay of the Dynamic Scheduling Logic"
    Joseph Sharkey, Dmitry Ponomarev, Kanad Ghose, **Oğuz Ergin**
    International Symposium on Low Power Electronics and Design **(ISLPED'05)**, San Diego, USA, August 2005, pp.30-35.

27. "Reducing Delay and Power Consumption of the Wakeup Logic through Instruction Packing and Tag Memoization"
    Joseph Sharkey, Dmitry Ponomarev, Kanad Ghose, **Oğuz Ergin**
    Workshop on Power Aware Computer Systems **(PACS'04)**
    Lecture Notes in Computer Science, (LNCS 3471), Springer-Verlag, 2005, pp.15-29.

28. "Register Packing: Exploiting Narrow-Width Operands for Reducing Register File Pressure"
    Oğuz Ergin, Deniz Balkan, Kanad Ghose, Dmitry Ponomarev
    37th International Symposium on Microarchitecture **(MICRO'04)**, Portland, USA, December 2004, pp.304-315.

29. "Increasing Processor Performance Through Early Register Release"
    Oğuz Ergin, Deniz Balkan, Dmitry Ponomarev, Kanad Ghose
    22nd International Conference on Computer Design **(ICCD'04)**, San Jose, USA, October 2004, pp.480-487.

30. "Defining Wakeup Width for Efficient Dynamic Scheduling"
    Aneesh Aggarwal, Manoj Franklin, **Oğuz Ergin**
    22nd International Conference on Computer Design **(ICCD'04)**, San Jose, USA, October 2004, pp.36-41.

31. "Selective Writeback: Improving Processor Performance and Energy Efficiency"
    Deniz Balkan, **Oğuz Ergin**, Dmitry Ponomarev, Kanad Ghose
    1st IBM Watson Conference on Interaction between Architecture, Circuits, and Compilers **(P=AC²04)**, IBM Research Center, Yorktown Heights, USA, October 2004, pp.171-180.

32. "Distributed Reorder Buffer Schemes for Low Power"
    Gürhan Küçük, **Oğuz Ergin**, Dmitry Ponomarev, Kanad Ghose
    21st International Conference on Computer Design **(ICCD'03)**, San Jose, USA, October 2003, pp.258-268.

33. "Reducing Datapath Energy Through the Isolation of Short-Lived Operands"
    Dmitry Ponomarev, Gürhan Küçük, **Oğuz Ergin**, Kanad Ghose
    12th International Conference on Parallel Architectures and Compilation Techniques **(PACT'03)**, New Orleans, USA, September 2003, pp.258-268.

34. "Energy-Efficient Register Renaming"
    Gürhan Küçük, **Oğuz Ergin**, Dmitry Ponomarev, Kanad Ghose
    Proceedings of *13th International Workshop on Power and Timing Modeling, Optimization and Simulation* **(PATMOS'03)**
    Lecture Notes in Computer Science, (LNCS 2799), Springer-Verlag, 2003, pp.219-228.

35. "Power Efficient Comparators for Long Arguments in Superscalar Processors"
Dmitry Ponomarev, Gürhan Küçük, **Oğuz Ergin**, Kanad Ghose
International Symposium on Low Power Electronics and Design **(ISLPED'03)**, Seoul, South Korea, August 2003, pp.378-383.

36. "Reducing Reorder Buffer Complexity Through Selective Operand Caching"
Gürhan Küçük, Dmitry Ponomarev, **Oğuz Ergin**, Kanad Ghose
International Symposium on Low Power Electronics and Design **(ISLPED'03)**, Seoul, South Korea, August 2003, pp.235-240.

37. "A Circuit-Level Implementation of Fast, Energy-Efficient CMOS Comparators for High-Performance Microprocessors"
Oğuz Ergin, Kanad Ghose, Gürhan Küçük, Dmitry Ponomarev
20th International Conference on Computer Design **(ICCD'02)**, Freiburg, Germany, September 2002, pp.118-121.

3.4 Patents

1. "Dynamically Estimating the Lifetime of Semiconductor Storage Elements"
Xavier Vera, Jaume Abella, Osman Ünsal, **Oğuz Ergin**, and Antonio González
US Patent 8,151,094.   filed: December 30, 2005   granted: April 3, 2012   Assignee: Intel Corporation.

2. "Detecting Soft Errors via Selective Re-execution"
Xavier Vera, **Oğuz Ergin**, Osman Ünsal, Jaume Abella, and Antonio González
US Patent 8,090,996.   filed: March 31, 2006   granted: January 3, 2012   Assignee: Intel Corporation.

3. "Enhancing Reliability of a Many-Core Processor"
Xavier Vera, Osman Ünsal, **Oğuz Ergin**, Jaume Abella, and Antonio González
US Patent 8,074,110.   filed: February 28, 2006   granted: December 6, 2011   Assignee: Intel Corporation.

4. "Clustered Variations-Aware Microarchitecture"
Xavier Vera, **Oğuz Ergin**, Osman Ünsal and Antonio González
US Patent 7,600,145.   filed: October 26, 2005   granted: October 6, 2009   Assignee: Intel Corporation.

5. "Reducing the Soft Error Vulnerability of Stored Data"
Oğuz Ergin, Osman Ünsal, Xavier Vera and Antonio González
US Patent 7,558,992.   filed: October 10, 2005   granted: July 7, 2009   Assignee: Intel Corporation.

3.5 Publications in Turkish

1. "Çok Çekirdekli İşlemciler için Ölçeklenebilir Çok Portlu Yazmaç Öbeğinin FPGA Tasarımı"
["FPGA Implementation of a Scalable Multi-Port Register File for Many-Core Processors"]
A. Giray Yağlıkçı, Hasan Hassan, **Oğuz Ergin**, Fatih Say
4th Turkish National Embedded Systems and Appllictions Symposium **(GömSis 2014)**, Istanbul, Turkey, November 2014.

2. "FIR Filtre Uygulamalarını Hızlandırmak: FPGA ve GPU Performans Karşılaştırması"
["FPGA vs GPU Performance Comparison on the Implementation of FIR Filters"]
Mehmet Burak Aykenar, Hasan Hassan, **Oğuz Ergin**
22nd Signal Processing and Communications Applications Conference **(SİU'14)**, Trabzon, Turkey, April 2014.

3. "Verileri Nota Kullanarak Şifreleme ve Ses Dosyası İçerisine Gizleme"
["Encrypting Data Using Musical Notes and Hiding This Information Inside Audio Files"]
Muhammet Hamdi Yavuz, **Oğuz Ergin**
3rd International Conference on Information Security and Cryptology **(ISCTurkey'08)**, Ankara, Turkey, December 2008.

4. "Telsiz Bilgisayar Mimarisi"
["Wireless Computer Architecture"]
Oğuz Ergin, Yusuf Onur Koçberber, Meltem Özsoy
1st Turkish National Embedded Systems and Appllictions Symposium **(GömSis 2008)**, Istanbul, Turkey, November 2008, p:2.

5. "Güç Kesintisi Uygulayan Devrelerin Uyanma Gecikmelerinin Belirlenme Zamanının Azaltılması"
["Decreasing the Simulation Time for Calculating the Wakeup Latency of the Circuits That Employ Sleep Transistors"]
Yusuf Sinan Hanay, **Oğuz Ergin**, Utku Diril
Turkish National Meeting on Automatic Control **(TOK'06)**, Ankara, Turkey, November 2006, pp.185-189.

3.6 Non-Technical Publications

1. "Why the Names? Anubanini and His Clan in the Cuthaean Legend"
Selim F. Adalı, M. Fatih Demirci, A. Murat Özbayoğlu, **Oğuz Ergin**
Gephyra 11, 2014, pp.15-28.

4 ACADEMIC ACTIVITIES

4.1 Grants

4.1.1 Principle Investigator

1. "OpenCL Compatible High Performance Accelerator Hardware Design for AIHS"
ASELSAN (Military Electronics Industries), May 2013 – April 2015
Budget: ~180.000 TL for 18 months (4 graduate students, equipment)

2. "Reliable Microprocessor Design"
The Scientific and Technological Research Council of Turkey (TÜBİTAK) – COST, June 2012 – June 2015.
Budget: 240.988 TL for 36 months (3 graduate students, travel, equipment)

3. "Development of an OpenCL Based Image Processing Library"
   Turkish Ministry of Science, Industry and Technology – SANTEZ, March 2012 – March 2014.
   Budget: 140.550 TL for 24 months (2 graduate students, travel, equipment)

4. "Design of an Embedded Processor, Designing the Test Infrastructure for OpenCL Driver and Compilers of Vivante Graphical Processors"
   Vivante Corporation, Silicon Valley (USA), May 2011 – June 2012.
   Budget: $108.830 for 14 months (3 graduate and 4 undergraduate students, equipment)

5. "A Scalable Register Renaming Technique"
   The Scientific and Technological Research Council of Turkey (TÜBİTAK) – 1001, September 2009 – September 2011.
   Budget: 116.450 TL for 24 months (2 graduate students, travel, equipment)

6. "Reducing the power dissipation of out-of-order microprocessors by detecting narrow values and narrow value phases"
   The Scientific and Technological Research Council of Turkey (TÜBİTAK) – 1001, July 2007 – July 2009.
   Budget: 96.650 TL for 24 months (2 graduate students, travel, equipment)

7. "Reliable Embedded Processors"
   European Network of Excellence on High-Performance Embedded Architecture and Compilation (HiPEAC), July 2007 – December 2008.
   Budget: €20.400 for 12 months (1 graduate student, travel)

4.1.2 Consultant
1. "Development of an RSFQ Based Integrated Circuit Design Tool and Arithmetic Logic Unit"
   The Scientific and Technological Research Council of Turkey (TÜBİTAK) – 1001, February 2012 – February 2015.
   Principle Investigator: Assistant Prof. Ali Bozbey, Budget: 445.691 TL for 36 months

4.1.3 Management Committee Member
1. "Manufacturable and Dependable Multicore Architectures at Nanoscale"
   European Cooperation in Science and Technology (COST), Information and Communication Technologies (ICT)
   COST Action IC1103, December 2011 – December 2015.

4.2 Courses Taught

- **University of Notre Dame**, Notre Dame, Indiana, United States
  - o CSE 60321 **Advanced Computer Architecture** [(Spring: 2014)]
  - o CSE 60462 **VLSI Design** [(Fall: 2014)]
- **TOBB University of Economics and Technology**, Ankara, Turkey
  - o BİL 102 **Programming with Java** [(Spring: 2006)]
  - o BİL 264 **Logic Design** [(Spring: 2007, 2013, 2015) (Summer: 2006, 2015) (Fall: 2011 – 2013)]
  - o BİL 264L **Logic Design Laboratory** [(Spring: 2013, 2015) (Summer: 2006, 2015) (Fall: 2011 – 2013)]
  - o BİL 361 **Computer Architecture and Organization** [(Fall: 2006 – 2008, 2012, 2013) (Spring: 2010 – 2013, 2015) (Summer: 2011, 2013)]
  - o BİL 362 **Microprocessors** [(Fall: 2008 – 2010, 2012) (Spring: 2007 – 2009) (Summer: 2009 – 2011)]
  - o BİL 362L **Microprocessors Laboratory** [(Fall: 2008 – 2010, 2012) (Spring: 2007 – 2009) (Summer: 2009 – 2011)]
  - o BİL 465/BİL566 **Advanced Computer Architecture** [(Fall: 2008 – 2010) (Spring: 2012) (Summer: 2009)]
  - o BİL 466/BİL569 **Embedded Systems** [(Spring: 2011)]
  - o ELE 222 **Analog Electronics** [(Spring: 2006)]
  - o ELE 222L **Analog Electronics Laboratory** [(Spring: 2006)]

4.3 Student Advising

4.3.1 Postdoctoral Researcher
- TOBB University of Economics and Technology, Ankara, Turkey

  1. **Kenan Bozdaş**, Nisan 2011 – June 2012. *After postdoc: TÜBİTAK SAGE (R&D Engineer), Ankara, Turkey*

4.3.2 Doctor of Philosophy (Ph.D.)
- TOBB University of Economics and Technology, Ankara, Turkey
  1. **Abdülaziz Eker**, ongoing.
  2. **Yakup Murat Mert**, ongoing
  3. **Fahrettin Koç**, ongoing

4.3.3 Master of Science (M.S.)
- TOBB University of Economics and Technology, Ankara, Turkey

  1. **Emrah İşlek**, May 2015. *After graduation: RST Technologies (R&D Engineer), Ankara, Turkey*
     Thesis Title: "Collective Pointing: Protecting Pointer Values Against Soft Errors on Processors"

  2. **Muhammet Özgür**, December 2014. *After graduation: Linera (R&D Engineer), Ankara, Turkey*
     Thesis Title: "Performance Analysis of Implementation of Radar Signal Processing Algorithms on FPGA and GPU"

  3. **Mustafa Çavuş**, December 2014. *After graduation: University of Rhode Island (PhD Student), Rhode Island, USA*
     Thesis Title: "Online AVF Estimation Using Multi Processing"

  4. **Osman Seçkin Şimşek**, September 2014. *After graduation: MILSOFT (R&D Engineer), Ankara, Turkey*
     Thesis Title: "OpenCL Based Image Processing Library for Embedded GPGPUs and a Sample Face Detection Application"

  5. **Hakkı Doğaner Sümerkan**, August 2014. *After graduation: University of Notre Dame (PhD Student), Indiana, USA*
     Thesis Title: "OpenCL Based Image Processing Library and Kernel Fusion on Embedded Systems"

  6. **Abdullah Giray Yağlıkçı**, August 2014. *After graduation: University of Notre Dame (PhD Student), Indiana, USA*
     Thesis Title: "Design of an FPGA Based Co-Processor For Digital Signal Processing Applications"

7. **Fahrettin Koç**,   August 2013.   *After graduation: **TÜBITAK SAGE** (R&D Engineer), Ankara, Turkey*
   Thesis Title: "Content Aware Bitcells Developed to Reduce Static Energy Dissipation for a New SRAM Design: CSRAM"

8. **Mehmet Burak Aykenar**,   August 2013.   *After graduation: **ROKETSAN** (R&D Engineer), Ankara, Turkey*
   Thesis Title: "FIR Filter Energy and Performance Comparison of GPU and FPGA for Mobile Platforms"

9. **Yaman Çakmakçı**,   September 2012.   *After graduation: **University of Manchester** (PhD Student), Manchester, Great Britain*
   Thesis Title: "Exploiting Virtual Addresses For Achieving Fault Tolerance In Microprocessors"

10. **Vehbi Eşref Bayraktar**,   September 2011.   *After graduation: **Vivante Corporation** (R&D Engineer), Silicon Valley, USA*
                                                      Currently at: *University of California-Davis (PhD Student), California, USA*
    Thesis Title: "Tag Simplification : Achieving Power Efficiency Through Reducing The Complexity Of The Wake Up Logic"

11. **Görkem Aşılıoğlu**,   August 2011.   *After graduation: **Michigan Technological University** (PhD Student), Michigan, USA*
    Thesis Title: "Complexity-Effective Rename Table Design For Rapid Speculation Recovery"

12. **Muhammet Hamdi Yavuz**,   September 2010.   *After graduation: **Infodif** (Engineer), Ankara, Turkey*
    Thesis Title: "Cryptography – Steganography System Design And Implementation Using Music"

13. **Mehmet Kayaalp**,   August 2010.   *After graduation: **State University of New York – Binghamton**, (PhD Student), New York, USA*
    Thesis Title: "Protecting The Register File Against Soft Errors Using SRAM Bit Cells With Built-in Comparators"

14. **Yusuf Onur Koçberber**,   September 2009.   *After graduation: **Ecole Polytechnique Federale de Lausenne (EPFL)** (PhD Student), Switzerland*
    Thesis Title: "Reducing Static Energy Dissipation of Data Holding Components of Modern Processors"

15. **Meltem Özsoy**,   July 2009.   *After graduation: **State University of New York – Binghamton** (PhD Student), New York, USA*
                                                      Currently at: *Intel (Research Scientist), Portland, Oregon, USA*
    Thesis Title: "Register File Partitioning for Energy Efficiency in Microprocessors"

16. **Hatice Şeyma Ülker**,   October 2007.   *After graduation: **Türk Telekom** (Engineer), Ankara, Turkey*
    Thesis Title: "Hardware design for predicting widths of values produced in microprocessors"

17. **Gülay Yalçın**,   September 2007.   *After graduation: **Barcelona Supercomputing Center** (PhD Student), Barcelona, Spain*
    Thesis Title: "Soft Error Detection by Using Tag Comparators in Microprocessors"

18. **Yusuf Sinan Hanay**,   June 2007.   *After graduation: **University of Massachusetts – Amherst** (PhD Student), Massachusetts, USA*
    Thesis Title: "Low Power Techniques for Superscalar Microprocessors"

19. **Serdar Zafer Can**   , ongoing.

20. **Eyüphan İpek**   , ongoing.

21. **Çağatay Turgut**   , ongoing.

22. **Hasan Hassan**   , ongoing.

23. **Gökhan Aslan**   , ongoing.

4.3.4   Undergraduate

- Middle East Technical University, Ankara, Turkey

    1. **Çağrı Eryılmaz**,   August 2014.   *After graduation: **The University of Texas at Austin** (PhD Student), Austin, Texas, USA*

- TOBB University of Economics and Technology, Ankara, Turkey

    2. **Begüm Birsen Eğilmez**,   April 2014.   *After graduation: **Northwestern University** (PhD Student), Chicago, Illinois, USA*
       Senior Project Title: "Accurate Estimation of Smartphone Skin Temperature at Runtime"

    3. **Emine Merve Kaya**,   August 2009.   *After graduation: **Johns Hopkins University** (PhD Student), Baltimore, Maryland, USA*
       Senior Project Title: "House LP - A 3-Dimensional Social Networking Game"

    4. **İlknur Cansu Kaynak**,   August 2009.   *After graduation: **Ecole Polytechnique Federale de Lausenne (EPFL)** (PhD Student), Switzerland*
       Senior Project Title: "Reducing the Energy Dissipation of the Issue Queue by Exploiting Narrow Immediate Operands"

4.4   Awards

1. **2009 – 2010 Distinguished Researcher Award**
   TOBB University of Economics and Technology, May 2011.
2. **Second Prize in Conceptual Processor Design Category (Kasırga Processor)**
   "CPU-Turkey" processor design contest, November 2008.
3. **Graduate Student Award for Excellence in Research**
   State University of New York at Binghamton, 2005.
4. **Department of Computer Science Fellowship**
   State University of New York at Binghamton, Spring 2003.

4.5   Technical Presentations

1. "Cloud Computing for Government"
   Turkish Information Technologies Association – 14th Meeting of the Union of Government IT Managers, Belek - Antalya, Turkey, 11 May 2012.
2. "Employing On-Chip Comparator Circuits for Detecting Errors"
   HiPEAC Computing Systems Week, Reliability Task Force Meeting, Wroclaw, Poland, 27 October 2009.
3. "Register Packing: Exploiting Narrow-Width Operands for Reducing Register File Pressure"
   37th International Symposium on Microarchitecture **(MICRO'04)**, Portland, Oregon, USA, 8 December 2004.
4. "Reducing Datapath Energy Through the Isolation of Short-Lived Operands"
   12th International Conference on Parallel Architectures and Compilation Techniques **(PACT'03)**, New Orleans, Louisiana, USA, 1 October 2003.

5. "Reducing Reorder Buffer Complexity Through Selective Operand Caching"
   ACM/IEEE International Symposium on Low Power Electronics and Design **(ISLPED'03)**, Seoul, South Korea, 27 August 2003.
6. "Power Efficient Comparators for Long Arguments in Superscalar Processors"
   ACM/IEEE International Symposium on Low Power Electronics and Design **(ISLPED'03)**, Seoul, South Korea, 26 August 2003.

4.6 Conference Service

- **Program Committee Member**
  - ○ IEEE International Conference on Computer Design (ICCD)
    - ▪ ICCD – 33, October 2015, New York City, USA
    - ▪ ICCD – 32, October 2014, Seoul, South Korea
    - ▪ ICCD – 31, October 2013, Asheville, North Carolina, USA
    - ▪ ICCD – 30, October 2012, Montreal, Quebec, Canada
    - ▪ ICCD – 29, October 2011, Amherst, Massachusetts, USA
    - ▪ ICCD – 28, October 2010, Amsterdam, Netherlands
  - ○ IEEE Symposium on Defect and Fault Tolerance in VLSI and Nanotechnology Systems
    - ▪ DFT – 17, October 2015, Amherts, Massachusetts, USA
    - ▪ DFT – 16, October 2014, Amsterdam, Netherlands
  - ○ Asia Symposium on Quality Electronic Design (ASQED)
    - ▪ ASQED – 6, August 2015, Penang, Malaysia
    - ▪ ASQED – 5, August 2013, Penang, Malaysia
    - ▪ ASQED – 4, July 2012, Penang, Malaysia
    - ▪ ASQED – 3, July 2011, Kuala Lumpur, Malaysia
  - ○ Manufacturable and Dependable Multicore Architectures at Nanoscale Workshop (MEDIAN)
    - ▪ MEDIAN – 3, held in conjunction with the Design, Automation and Test in Europe Conference (DATE'14), March 2014, Dresden, Germany
    - ▪ MEDIAN – 2, held in conjunction with the IEEE European Testing Symposium (ETS'13), May 2013, Avignon, France
    - ▪ MEDIAN – 1, held in conjunction with the IEEE European Testing Symposium (ETS'12), May 2012, Annecy, France
  - ○ International Conference on Energy Aware Computing (ICEAC)
    - ▪ ICEAC – 5, March 2015, Cairo, Egypt
    - ▪ ICEAC – 4, December 2013, Istanbul, Turkey
    - ▪ ICEAC – 3, December 2012, Northern Cyprus
    - ▪ ICEAC – 2, December 2011, Istanbul, Turkey, (Publication Chair)
  - ○ Joint Euro-TM/MEDIAN Workshop on Dependable Multicore and Transactional Memory Systems (DMTM)
    [to be held in conjunction with the (HiPEAC'14) conference], January 2014, Vienna, Austuria
  - ○ HiPEAC Workshop on Design for Reliability (DFR)
    - ▪ DFR – 5, held in conjunction with the (HiPEAC'13), January 2013, Berlin, Germany
    - ▪ DFR – 4, held in conjunction with the (HiPEAC'12), January 2012, Paris, France
    - ▪ DFR – 3, held in conjunction with the (HiPEAC'11), January 2011, Heraklion, Crete, Greece
    - ▪ DFR – 2, held in conjunction with the (HiPEAC'10), January 2010, Pisa, Italy
    - ▪ DFR – 1, held in conjunction with the (HiPEAC'09), January 2009, Paphos, Cyprus
  - ○ Interdisciplinary Engineering Design Education Conference (IEDEC)
    - ▪ IEDEC – 4, March 2014, Santa Clara, California, USA
    - ▪ IEDEC – 3, March 2013, Santa Clara, California, USA
  - ○ Turkish National Embedded Systems and Applications Symposium (GömSis)
    - ▪ GömSis – 4, November 2014, Istanbul
    - ▪ GömSis – 3, November 2012, Istanbul
    - ▪ GömSis – 2, November 2010, Istanbul
    - ▪ GömSis – 1, November 2008, Istanbul
  - ○ Signal Processing and Communications Applications Conference (SİU)
    - ▪ SİU –22, April 2014, Trabzon, Turkey
  - ○ 22. International Symposium on Computer and Information Sciences (ISCIS 2007), November 2007, Ankara
  - ○ Workshop on Architectural Support for Gigascale Integration (ASGI'06), Boston, USA
    [held in conjunction with the International Symposium on Computer Architecture (ISCA - 33)], June 2006
- **Organizing Committee Member**
  - ○ Workshop on Architectural Reliability (later Workshop on Dependable Architectures)
    - ▪ (WDA – 3) - [held in conjunction with the International Symposium on Microarchitecture (MICRO - 41)], November 2008
    - ▪ (WAR – 2) - [held in conjunction with the International Symposium on Microarchitecture (MICRO - 39)], November 2006, Cochairman
    - ▪ (WAR – 1) - [held in conjunction with the International Symposium on Microarchitecture (MICRO - 38)], November 2005

4.7 Technical Referee

4.7.1 Research Projects

- Turkish Ministry of Science, Industry and Technology

○	Industrial Thesis Program	**(SAN-TEZ)**	[2011, 2013]
○	Technological Entrepreneurship Program	**(Teknogirişim)**	[2012]
○	R&D Centers		[2012, 2013]

- The Scientific and Technological Research Council of Turkey (TÜBİTAK)

○	Technology and Innovation Support Programs	**(TEYDEB)**	[2008, 2011 – 2013]
○	Electrical, Electronics, Informatics Research Support Programs	**(EEEAG)**	[2012, 2013]

- European Union (EU)

o CHISTERA		[2014]
• Netherlands Organization for Scientific Research	(NWO)	
o Smart Energy Systems Research Program		[2010]

4.7.2   Scientific Journals

• ACM Transactions on Architecture and Code Optimization	**(TACO)**	[2009, 2011, 2013]
• ACM Transactions on Design Automation of Electronic Systems	**(TODAES)**	[2011, 2015]
• Computer Applications in Engineering Education	**(CAE)**	[2010]
• Elsevier Microelectronics Reliability	**(MR)**	[2015]
• Elsevier Microprocessors and Microsystems	**(MICPRO)**	[2013]
• Gazi University Journal of Science	**(GUJS)**	[2010, 2011]
• IEE Proceedings on Computers and Digital Techniques	**(CDT)**	[2006]
• IEEE Computer Architecture Letters	**(CAL)**	[2008, 2015]
• IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems	**(TCAD)**	[2011, 2013]
• IEEE Transactions on Computers	**(TC)**	[2004, 2006 – 2015]
o Special Issue: Defect and Fault Tolerance		[2015]
• IEEE Transactions on Device and Materials Reliability	**(TDMR)**	[2014]
• IEEE Transactions on Industrial Electronics	**(TIE)**	[2009, 2010]
• IEEE Transactions on Nanotechnology	**(TNANO)**	[2012]
• IEEE Transactions on Parallel and Distributed Computing	**(TPDS)**	[2013]
• IEEE Transactions on Reliability		[2014]
• IEEE Transactions on Very Large Scale Integration Systems	**(TVLSI)**	[2014]
• IET Circuits, Devices and Systems	**(IET-CDS)**	[2013]
• Journal of Circuits, Systems and Computers	**(JCSC)**	[2008]
• Turkish Journal of Electrical Engineering and Computer Sciences	**(TJEECS)**	[2011, 2012, 2014]

4.7.3   Conferences

• European Conference on Circuit Theory and Design	**(ECCTD)**	[2009]
• Intel Design and Test Technology Conference [Internal Conference]	**(Intel DTTC)**	[2005]
• International Conference on Computer Design	**(ICCD)**	[2005, 2006, 2010 – 2013]
• International Conference on High Performance Computing	**(HiPC)**	[2005]
• International Conference on Parallel Architectures and Compilation Techniques	**(PACT)**	[2012]
• International Conference on Parallel Processing and Applied Mathematics	**(PPAM)**	[2013]
• International Conference on Supercomputing	**(ICS)**	[2014]
• International Symposium on Computer and Information Sciences	**(ISCIS)**	[2006]
• International Symposium on Computer Architecture	**(ISCA)**	[2005, 2006, 2010, 2011]
• International Symposium on Microarchitecture	**(MICRO)**	[2011]
• International Symposium on Performance Analysis of Systems and Software	**(ISPASS)**	[2006]

5   ACTIVITIES AND MEMBERSHIPS

- Member of the European Network of Excellence on High-Performance Embedded Architecture and Compilation (HiPEAC) (2006 – current)
- Institute of Electrical and Electronics Engineers (IEEE)
  - o   **Member,** (2011 – current)
  - o   **Student Member,** (2001 – 2005)
  - o   **Computer Society Member,** (2001 – 2005)
- Turkish Information Technologies Association – Union of Government IT Managers
  - o   **Cloud Computing** Work Group, Chairman, 2012
  - o   **Virtualization** Work Group, Vice Chairman, 2010
- President of the Binghamton University Turkish Student Association (August'01 – March'02), (September'03 – May'04)

6   SKILLS

- Languages: Turkish (Native), English
- Design Tools: Cadence (Virtuoso, Spectre, Affirma), Magic, VHDL, Verilog HDL, HSpice, Microarchitecture Simulators
- Programming: C, C++, Java, Pascal, Haskell