

## Prof. İSMAİL KADAYIF

### Personal Information

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### Education Information

Doctorate, Pennsylvania State University University College Park Campus, Department Of Computer Science & Engineering, United States Of America 1997 - 2003

Post Graduate, Illinois Institute of Technology, Department Of Computer Science, United States Of America 1995 - 1997

Under Graduate, Istanbul Technical University, Elektrik-Elektronik Fakültesi, Kontrol Ve Bilgisayar Mühendisliği, Turkey 1987 - 1991

### Foreign Languages

English, B2 Upper Intermediate

### Dissertations

Doctorate, Compiler-Directed Energy Estimation and Optimization for Uniprocessors and Multiprocessor Systems-on-a-Chip Architectures , Pennsylvania State University University College Park Campus, Department Of Computer Science & Engineering, Department Of Computer Science & Engineering, 2003

### Research Areas

Computer Sciences, algorithms, Parallel Algorithms, Equipment, Memory and Storage, Processor Architectures, Database and Data Structures, Data Structures, Software, Operating Systems, Programming Languages, Soft Computing, Engineering and Technology

### Academic Titles / Tasks

Professor, Canakkale Onsekiz Mart University, Mühendislik Fakültesi, 2017 - Continues

Associate Professor, Canakkale Onsekiz Mart University, Mühendislik Fakültesi, 2011 - 2017

Assistant Professor, Canakkale Onsekiz Mart University, Mühendislik Mimarlık, Bilgisayar Mühendisliği, 2004 - 2011

### Professional Experience

Vice Dean, Canakkale Onsekiz Mart University, Mühendislik Fakültesi, 2015 - Continues

Head of Department, Canakkale Onsekiz Mart University, Bilgisayar Mühendisliği, 2006 - 2013

## Courses

Mesleki İngilizce II, Under Graduate, 2014 - 2015  
Proje I, Under Graduate, 2015 - 2016  
Yüksek Performanslı İşlemciler, Post Graduate, 2014 - 2015  
Bilgisayar Mimarisi, Under Graduate, 2014 - 2015  
Formal Diller ve Otomat Teorisi, Under Graduate, 2015 - 2016  
Paralel İşlemciler ve İşlem, Post Graduate, 2015 - 2016  
Bilgisayar Organizasyonu, Under Graduate, 2014 - 2015  
Proje II, Under Graduate, 2014 - 2015  
Mesleki İngilizce I, Under Graduate, 2015 - 2016  
Veri Yapıları, Under Graduate, 2015 - 2016

## Advising Theses

KADAYIF İ., Java 1.5 Programlama Dili İçin Bir Ayrıştırıcı Tasarımı ve Gerçekleştirimi, Post Graduate, M.ÖZÇETİN(Student), 2012  
KADAYIF İ., İşlem Değişikliklerinin Etkisini azaltmak İçin Komut Önbelleği Gecikmesinin Kodlanması, Post Graduate, S.KIZILTEPE(Student), 2010  
KADAYIF İ., İskenderun Demir ve Çelik A.Ş. Dağıtık Otomasyon ve Bilgi Sistemleri İçin Network Altyapısının Oluşturulması, Post Graduate, O.İslam(Student), 2010  
KADAYIF İ., Çok Çekirdekli Sistemlerin Veri Önbellekleri İçin Geçici Hataların Modellenmesi, Post Graduate, S.KOYUMCU(Student), 2009  
KADAYIF İ., Teknolojik Yetersizliklerin Komut TLB'si Üzerindeki Etkisinin Fiziksel Adreslerin Direkt Suretiyle Azalması, Post Graduate, M.TÜRKCAN(Student), 2009  
KADAYIF İ., Veri Önbelleği Güvenirliğinin Modellenmesi ve Geliştirilmesi, Post Graduate, H.ŞEN(Student), 2008  
KADAYIF İ., AB Bologna Sürecinde Üniversiteler İçin WEB Tabanlı Akademik Özgeçmiş Nilgi Sistemi, Post Graduate, Y.ŞAHİN(Student), 2008  
KADAYIF İ., Ölü Bloklara Dayalı Veri Önbelleği Güvenirliğinin Artırılması, Post Graduate, D.AKÇİÇEK(Student), 2007  
KADAYIF İ., Önbelleklerde Önceden Getirme İle Soft Errorlar Arasındaki İlişkilerin Araştırılması, Post Graduate, O.KABAL(Student), 2007  
KADAYIF İ., Önbelleklerde Kullanılan Enerjinin Optimizasyonu ve Enerji Kaybının Azaltılması, Post Graduate, A.ZORLUBAŞ(Student), 2006  
KADAYIF İ., Akıllı Ev Otomasyonu, Post Graduate, U.BAYRAM(Student), 2006

## Jury Memberships

Appointment Academic Staff, Yrd. Doç. Dr. kadrosuna atama jürisi, Bilgisayar Mühendisliği, October, 2015  
Post Graduate, FIPA İngiliz Açık Artırma Etkileşim Prtokolünün SEAGENT Çerçevesi İle Gerçekleştirimi (Ç.O.M.Ü), Bilgisayar Mühendisliği, July, 2013  
Post Graduate, Wavelet Tabanlı Telif Hakkı Koruma Yöntemi (Ç.O.M.Ü), Bilgisayar Mühendisliği, October, 2011  
Post Graduate, Yapay Sinir Ağları Kullanılarak Araç Plakalarının Tanınması (Ç.O.M.Ü), Bilgisayar Mühendisliği, June, 2010

## Articles Published in Journals That Entered SCI, SSCI and AHCI Indexes

1. **Classifying Data Blocks at Subpage Granularity with an On-Chip Page Table to Improve Coherence in Tiled CMPs**  
Soltaniyeh M., KADAYIF İ., Öztürk Ö.

IEEE TRANSACTIONS ON COMPUTER-AIDED DESIGN OF INTEGRATED CIRCUITS AND SYSTEMS, vol.37, no.4, pp.806-819, 2018 (Journal Indexed in SCI)

- II. **Energy reduction in 3D NoCs through communication optimization**  
Ozturk O., AKTURK I., KADAYIF İ., Tosun S.  
COMPUTING, vol.97, no.6, pp.593-609, 2015 (Journal Indexed in SCI)
- III. **Hardware/Software Approaches for Reducing the Process Variation Impact on Instruction Fetches**  
KADAYIF İ., TURKCAN M., KIZILTEPE S., Ozturk O.  
ACM TRANSACTIONS ON DESIGN AUTOMATION OF ELECTRONIC SYSTEMS, vol.18, no.4, 2013 (Journal Indexed in SCI)
- IV. **Modeling soft errors for data caches and alleviating their effects on data reliability**  
KADAYIF İ., SEN H., KOYUNCU S.  
MICROPROCESSORS AND MICROSYSTEMS, vol.34, no.6, pp.200-214, 2010 (Journal Indexed in SCI)
- V. **Capturing and optimizing the interactions between prefetching and cache line turnoff**  
KADAYIF İ., ZORLUBAS A., KOYUNCU S., KABAL O., AKCICEK D., SAHIN Y., KANDEMİR M.  
MICROPROCESSORS AND MICROSYSTEMS, vol.32, no.7, pp.394-404, 2008 (Journal Indexed in SCI)
- VI. **Reducing data TLB power via compiler-directed address generation**  
Kadayif I., NATH P., Kandemir M., SIVASUBRAMANIAM A.  
IEEE TRANSACTIONS ON COMPUTER-AIDED DESIGN OF INTEGRATED CIRCUITS AND SYSTEMS, vol.26, no.2, pp.312-324, 2007 (Journal Indexed in SCI)
- VII. **Compiling for memory emergency**  
KANDEMİR M., CHEN G., Kadayif I.  
ACM SIGPLAN NOTICES, vol.40, no.7, pp.213-221, 2005 (Journal Indexed in SCI)
- VIII. **Optimizing array-intensive applications for on-chip multiprocessors**  
Kadayif I., KANDEMİR M., CHEN G., OZTURK O., KARAKOY M., SEZER U.  
IEEE TRANSACTIONS ON PARALLEL AND DISTRIBUTED SYSTEMS, vol.16, no.5, pp.396-411, 2005 (Journal Indexed in SCI)
- IX. **Optimizing instruction TLB energy using software and hardware techniques**  
Kadayif I., SIVASUBRAMANIAM A., KANDEMİR M., KANDIRAJU G., Chen G., Chen G.  
ACM TRANSACTIONS ON DESIGN AUTOMATION OF ELECTRONIC SYSTEMS, vol.10, no.2, pp.229-257, 2005 (Journal Indexed in SCI)
- X. **An integer linear programming-based tool for wireless sensor networks**  
Kadayif I., Kandemir A., VIJAYKRISHNAN N., IRWIN M.  
JOURNAL OF PARALLEL AND DISTRIBUTED COMPUTING, vol.65, no.3, pp.247-260, 2005 (Journal Indexed in SCI)
- XI. **A hybrid strategy based on data distribution and migration for optimizing memory locality**  
Kadayif I., KANDEMİR M., CHOUDHARY A.  
LANGUAGES AND COMPILERS FOR PARALLEL COMPUTING, vol.2481, pp.111-125, 2005 (Journal Indexed in SCI)
- XII. **Quasidynamic layout optimizations for improving data locality**  
Kadayif I., KANDEMİR M.  
IEEE TRANSACTIONS ON PARALLEL AND DISTRIBUTED SYSTEMS, vol.15, no.11, pp.996-1011, 2004 (Journal Indexed in SCI)
- XIII. **Access pattern restructuring for memory energy**  
De La Luz V., Kadayif I., Kandemir M.  
IEEE TRANSACTIONS ON PARALLEL AND DISTRIBUTED SYSTEMS, vol.15, no.4, pp.289-303, 2004 (Journal Indexed in SCI)
- XIV. **Compiler-directed scratch pad memory optimization for embedded multiprocessors**  
Kandemir M., Kadayif I., Choudhary A., Ramanujam J., Kolcu I.  
IEEE TRANSACTIONS ON VERY LARGE SCALE INTEGRATION (VLSI) SYSTEMS, vol.12, no.3, pp.281-287, 2004 (Journal Indexed in SCI)
- XV. **A compiler-based approach for dynamically managing scratch-pad memories in embedded systems**  
KANDEMİR M., RAMANUJAM J., IRWIN M., VIJAYKRISHNAN N., Kadayif I., PARIKH A.  
IEEE TRANSACTIONS ON COMPUTER-AIDED DESIGN OF INTEGRATED CIRCUITS AND SYSTEMS, vol.23, no.2,

- pp.243-260, 2004 (Journal Indexed in SCI)
- XVI. **Compiler-guided code restructuring for improving instruction TLB energy behavior**  
Kadayif I, Kandemir M., Demirkiran I.  
EURO-PAR 2004 PARALLEL PROCESSING, PROCEEDINGS, vol.3149, pp.304-309, 2004 (Journal Indexed in SCI)
- XVII. **An energy-oriented evaluation of communication optimizations for microsensor networks**  
Kadayif I, KANDEMIR M., CHOUDHARY A., KARAKOY M.  
EURO-PAR 2003 PARALLEL PROCESSING, PROCEEDINGS, vol.2790, pp.279-286, 2003 (Journal Indexed in SCI)
- XVIII. **Influence of loop optimizations on energy consumption of multi-bank memory systems**  
KANDEMIR M., KOLCU İ., Kadayif I.  
COMPILER CONSTRUCTION, PROCEEDINGS, vol.2304, pp.276-292, 2002 (Journal Indexed in SCI)
- XIX. **Morphable cache architectures: Potential benefits**  
Kadayif I, KANDEMIR M., VIJAYKRISHNAN N., IRWIN M., RAMANUJAM J.  
ACM SIGPLAN NOTICES, vol.36, no.8, pp.128-137, 2001 (Journal Indexed in SCI)
- XX. **vEC: Virtual Energy Counters**  
Kadayif I, CHINODA T., KANDEMIR M., VIJAYKRISHNAN N., IRWIN M., SIVASUBRAMANIAM A.  
ACM SIGPLAN NOTICES, pp.28-31, 2001 (Journal Indexed in SCI)

## Refereed Congress / Symposium Publications in Proceedings

- I. **Reliable Address Translation for Instructions**  
KADAYIF İ., UĞURLU B.  
9th International Conference on Electrical and Electronics Engineering (ELECO), Bursa, Turkey, 26 - 28 November 2015, pp.762-766
- II. **Hata Doğrulama Kodlarının Veri Önbelleğindeki Hataları Düzeltmedeki Verimliliğinin Araştırılması**  
TUNÇER K., KADAYIF İ.  
Eleco-2012, Turkey, 29 November - 01 December 2012, vol.0, pp.608-612
- III. **Reducing Performance Impact of Process Variation For Data Caches**  
KADAYIF İ., TUNÇER K.  
8th International Conference on Electrical and Electronics Engineering (ELECO), Bursa, Turkey, 28 - 30 November 2013, pp.380-384
- IV. **Exploiting potentially dead blocks for improving data cache reliability against soft errors**  
AKCICEK D., KOYUNCU S., SEN H., KADAYIF İ.  
22nd International Symposium on Computer and Information Sciences, Ankara, Turkey, 7 - 09 November 2007, pp.340-345
- V. **Modeling and Improving Data Cache Reliability**  
KADAYIF İ., KANDEMIR M.  
International Conference on Measurement and Modeling of Computer Systems, California, United States Of America, 12 - 16 June 2007, vol.35, pp.1-2
- VI. **Prefetching-aware cache line turnoff for saving leakage energy**  
KADAYIF İ., KANDEMIR M., LI F.  
11th Asia and South Pacific Design Automation Conference, Yokohama, Japan, 24 - 27 January 2006, pp.182-187
- VII. **Studying interactions between prefetching and cache line turnoff**  
Kadayif I, KANDEMIR M., CHEN G.  
10th Asia and South Pacific Design Automation Conference, Shanghai, China, 18 - 21 January 2005, pp.545-548
- VIII. **Tuning in-sensor data filtering to reduce energy consumption in wireless sensor networks**  
Kadayif I, KANDEMIR M.  
Design, Automation and Test in Europe Conference and Exhibition (DATE 04), Paris, France, 16 - 20 February 2004, pp.852-857
- IX. **Compiler-directed physical address generation for reducing dTLB power**  
Kadayif I, NATH P., KANDEMIR M., SIVASUBRAMANIAM A.

IEEE International Symposium on Performance Analysis of Systems and Software, Texas, United States Of America, 10 - 12 March 2004, pp.161-168

- X. **Exploiting processor workload heterogeneity for reducing energy consumption in chip multiprocessors**  
Kadayif I, Kandemir M., Kolcu I.  
Design, Automation and Test in Europe Conference and Exhibition (DATE 04), Paris, France, 16 - 20 February 2004, pp.1158-1163
- XI. **Compiler-directed code restructuring for reducing data TLB energy**  
KANDEMİR M., KADAYIF I., CHEN G.  
2nd International Conference on Hardware/Software Codesign and Systems Synthesis, Stockholm, Sweden, 8 - 10 September 2004, pp.98-103
- XII. **An integrated approach for improving cache behavior**  
MEMIK G., KANDEMİR M., CHOUDHARY A., Kadayif I.  
Design, Automation and Test in Europe Conference and Exhibition (DATE 03), Munich, Germany, 3 - 07 March 2003, pp.796-801
- XIII. **Generalized data transformations for enhancing cache behavior**  
De La Luz V., Kandemir M., Kadayif I., Sezer U.  
Design, Automation and Test in Europe Conference and Exhibition (DATE 03), Munich, Germany, 3 - 07 March 2003, pp.906-911
- XIV. **Generalized data transformations**  
DE LA LUZ V., Kadayif I., KANDEMİR M., SEZER U.  
Embedded Software Forum of the Design, Automation and Test in Europe Conference, Munich, Germany, 01 March 2003, pp.421-434
- XV. **Compiler-directed management of instruction accesses**  
Chen G., Chen G., Kadayif I., Zhang W., Kandemir M., Kolcu I., Sezer U.  
Euromicro Symposium on Digital System Design, BELEK, Turkey, 1 - 06 September 2003, pp.459-462
- XVI. **CCC: Crossbar connected caches for reducing energy consumption of on-chip multiprocessors**  
LI L., VIJAYKRISHNAN N., KANDEMİR M., IRWIN M., Kadayif I.  
Euromicro Symposium on Digital System Design, BELEK, Turkey, 1 - 06 September 2003, pp.41-48
- XVII. **Hardware/software techniques for improving cache performance in embedded systems**  
MEMIK G., KANDEMİR M., CHOUDHARY A., Kadayif I.  
Embedded Software Forum of the Design, Automation and Test in Europe Conference, Munich, Germany, 01 March 2003, pp.387-401
- XVIII. **Influence of communication optimizations on on-chip multi-processor energy**  
Kadayif I, KANDEMİR M., CHEN G.  
IEEE International SOC Conference, Oregon, United States Of America, 17 - 20 September 2003, pp.255-256
- XIX. **Optimizing inter-processor data locality**  
KANDEMİR M., KADAYIF İ., CHOUDHARY A., ZAMBRENO J.  
Proceedings of the international conference on Compilers, architecture, and synthesis for embedded systems - CASES 'xx02, Grenoble, France, 8 - 11 October 2002
- XX. **An integer linear programming based approach for parallelizing applications in on-chip multiprocessors**  
Kadayif I, KANDEMİR M., SEZER U.  
39th Design Automation Conference, Louisiana, United States Of America, 10 - 14 June 2002, pp.703-708
- XXI. **Experimental evaluation of a compiler-based cache energy optimization strategy**  
Kandemir M., Kolcu I, Kadayif I.  
15th Annual IEEE International ASIC/SOC Conference, New-York, United States Of America, 25 - 28 September 2002, pp.296-300
- XXII. **Leakage energy management in cache hierarchies**  
LI L., Kadayif I., TSAI Y., VIJAYKRISHNAN N., KANDEMİR M., IRWIN M., SIVASUBRAMANIAM A.  
International Conference on Parallel Architectures and Compilation Techniques, Virginia, United States Of America,

22 - 25 September 2002, pp.131-140

- XXIII. **Generating physical addresses directly for saving instruction TLB energy**  
Kadayif I, SIVASUBRAMANIAM A., KANDEMIR M., KANDIRAJU G., CHEN G.  
35th Annual IEEE/ACM International Symposium on Microarchitecture, İstanbul, Turkey, 18 - 22 November 2002, pp.185-196
- XXIV. **EAC: A compiler framework for high-level energy estimation and optimization**  
Kadayif I, KANDEMIR M., VIJAYKRISHNAN N., IRWIN M., SIVASUBRAMANIAM A.  
Design, Automation and Test in Europe Conference and Exhibition (DATE 2002), Paris, France, 4 - 08 March 2002, pp.436-442
- XXV. **Hardware-software co-adaptation for data-intensive embedded applications.**  
Kadayif I, KANDEMIR M., VIJAYKRISHNAN N., IRWIN M.  
IEEE Computer-Society Annual Symposium on VLSI, Pennsylvania, United States Of America, 25 - 26 April 2002, pp.20-25
- XXVI. **An energy saving strategy based on adaptive loop parallelization**  
Kadayif I, KANDEMIR M., KARAKOY M.  
39th Design Automation Conference, Louisiana, United States Of America, 10 - 14 June 2002, pp.195-200
- XXVII. **Instruction compression and encoding for low-power systems**  
Kadayif I, KANDEMIR M.  
15th Annual IEEE International ASIC/SOC Conference, New-York, United States Of America, 25 - 28 September 2002, pp.301-305
- XXVIII. **Locality-conscious process scheduling in embedded systems**  
Kadayif I, Kandemir M., Kolcu I., Chen G.  
10th International Symposium on Hardware/Software Codesign (CODES 2002), Colorado, United States Of America, 6 - 08 May 2002, pp.193-198
- XXIX. **Dynamic management of scratch-pad memory space**  
KANDEMIR M., RAMANUJAM J., IRWIN M., VIJAYKRISHNAN N., Kadayif I, PARIKH A.  
38th Design Automation Conference (DAC), Nevada, United States Of America, 18 - 22 June 2001, pp.690-695
- XXX. **Exploiting scratch-pad memory using Presburger formulas**  
KANDEMIR M., Kadayif I., SEZER U.  
14th International Symposium on System Synthesis (ISSS), Montreal, Canada, 30 September - 03 October 2001, pp.7-12
- XXXI. **Compiler-directed selection of dynamic memory layouts**  
KANDEMIR M., Kadayif I.  
9th International Symposium on Hardware/Software Codesign (CODES 2001), COPENHAGEN, Denmark, 25 - 27 April 2001, pp.219-224

## Supported Projects

KADAYIF İ., TUBITAK Project, Karo Yapılı Çok Çekirdekli İşlemcilerde Dizin Temelli Önbellek Tutarlılığı Verimliliğinin Artırılmasına Yönelik Donanım/Yazılım Mekanizmaları, 2013 - Continues

UĞURLU B., BAYRAM U., BAYRAM V., KADAYIF İ., Project Supported by Higher Education Institutions, GPR ile Yeraltı Haritalaması Yapan Otonom Robot, 2018 - 2020

KADAYIF İ., YAŞAR C., AKÇİÇEK D., Project Supported by Higher Education Institutions, Düşük Konfigürasyonlu Bilgisayarların Değerlendirilmesi, 2007 - 2009

KADAYIF İ., TUBITAK Project, Ölü Bloklar Kullanılarak Düşük Güçlü Güvenirli Önbellek Tasarımı, 2006 - 2008

## Memberships / Tasks in Scientific Organizations

IEEE, Member, 2000 - Continues

## Scientific Refereeing

TUBITAK Project, December 2015

TUBITAK Project, November 2015

TUBITAK Project, October 2015

ACM TRANSACTIONS ON DESIGN AUTOMATION OF ELECTRONIC SYSTEMS, SCI Journal, September 2015

TUBITAK Project, September 2015

TUBITAK Project, August 2015

TUBITAK Project, May 2015

TUBITAK Project, April 2015

IEEE Computer Society, SCI Journal, December 2014

IEEE TRANSACTIONS ON PARALLEL AND DISTRIBUTED SYSTEMS, SCI Journal, January 2014

IEEE TRANSACTIONS ON PARALLEL AND DISTRIBUTED SYSTEMS, SCI Journal, December 2013

TUBITAK Project, December 2013

IEEE TRANSACTIONS ON PARALLEL AND DISTRIBUTED SYSTEMS, SCI Journal, July 2013

IEEE TRANSACTIONS ON COMPUTER-AIDED DESIGN OF INTEGRATED CIRCUITS AND SYSTEMS, SCI Journal, March 2013

TUBITAK Project, December 2012

IEEE TRANSACTIONS ON PARALLEL AND DISTRIBUTED SYSTEMS, SCI Journal, July 2012

TUBITAK Project, November 2011

TUBITAK Project, May 2011

TUBITAK Project, November 2010

IEEE TRANSACTIONS ON PARALLEL AND DISTRIBUTED SYSTEMS, SCI Journal, October 2010

IEEE TRANSACTIONS ON PARALLEL AND DISTRIBUTED SYSTEMS, SCI Journal, June 2008

## Citations

Total Citations (WOS):400

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