



BUSE YILMAZ

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EDUCATION

Doctor of Philosophy <i>Computer Engineering</i> Özyeğin University	Sept. 2011 – Jan. 2016 Istanbul, Türkiye
Master of Science <i>Computer Engineering</i> Yeditepe University	Sept. 2009 – Jun 2011 Istanbul, Türkiye
Bachelor of Science <i>Computer Engineering</i> Yeditepe University	Sept. 2005 – Jun 2009 Istanbul, Türkiye

WORK EXPERIENCE

Assistant Professor, Head of Department Dept. of Software Engineering, İstinye University	Aug. 2020 – , Oct. 2022 – Istanbul, Türkiye
<ul style="list-style-type: none">• Research: Optimization of sparse solvers on heterogeneous platforms using graph transformation• Teaching: Various undergraduate courses. Please visit teaching for the complete list.	
Parttime Lecturer Dept. of Computer Engineering, MEF University	Sept. 2022 – Feb. 2023 Istanbul, Türkiye
<ul style="list-style-type: none">• Teaching: Systems Programming (undergraduate) course.	
Postdoctoral Research Associate Dept. of Computer Engineering, Koç University, ParcoreLab (Dr. Didem Unat)	Sept. 2018 – Sept. 2020 Istanbul, Türkiye
<ul style="list-style-type: none">• Optimization of sparse solvers on heterogeneous platforms• Program analysis for optimizing process migration between multicore machines	
Postdoctoral Research Associate Bradley Department of Electrical and Computer Engineering, Virginia Tech	Sept. 2016 – Sept. 2018 Blacksburg, USA
<ul style="list-style-type: none">• Research: Compiler and runtime extension for PowerPC architecture in Popcorn Linux Project, optimizing performance by machine learning for process migration on heterogenous-ISA platforms• Teaching: Introduction to UNIX for Engineers course (Jan 2018 – May 2018)	
Instructor Dept. of Computer Engineering, Özyeğin University	Jan. 2016 – Aug. 2016 Istanbul, Türkiye
<ul style="list-style-type: none">• Teaching: Programming Studio course and co-instructed two other courses. Please visit teaching for the complete list.	

RESEARCH EXPERIENCE

My research interests include high performance computing, program generation and autotuning. Currently, I'm working on optimizing sparse solvers using graph transformation on both CPUs and GPUs. I also enjoy building tools and libraries that does program analysis, input analysis and profiling taking advantage of compilers such as LLVM and machine learning.

TÜBİTAK 3501 Career Development Program Funding Graph Transformation and Specialized Code Generation For Sparse Triangular Solve	March 2022 - Sept. 2024
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PhD Thesis Runtime Specialization and Autotuning of Sparse Matrix-Vector Multiplication	Sept. 2011 – Jan. 2016
Master Thesis A Novel Meta-heuristic for Graph Coloring Problem: Simulated Annealing with Backtracking (SABT)	Sept. 2009 – Jun 2011
Graduation Project Representation Issue in Graph Coloring	Sept. 2008 – May 2009

PUBLICATIONS

Journals

- [CCPE 22 - under revision] **Buse Yılmaz, Abdülkadir Furkan Yıldız**
 "A Novel Graph Transformation Strategy for Optimizing SpTRSV on CPUs"
BASARIM 2022 Special Issue, Concurrency and Computation: Practice and Experience
- [TPDS 21] **Najeeb Ahmad, Buse Yılmaz, Didem Unat**
 "A Split Execution Model for SpTRSV"
IEEE Transactions on Parallel and Distributed Systems, vol. 32, no. 11, pp. 2809-2822, 1 Nov. 2021
 DOI: <https://doi.org/10.1109/TPDS.2021.3074501>
- [TACO 16] **Buse Yılmaz, Barış Aktemur, María Jesús Garzarán, Sam Kamin, Furkan Kırac.**
 "Autotuning Runtime Specialization for Sparse Matrix-Vector Multiplication"
ACM Trans. Archit. Code Optim. 13, 1, Article 5 (March 2016), 26 pages
 DOI: <https://doi.org/10.1145/2851500>

Refereed Conference and Workshop Proceedings

- [Başarım 22] **Buse Yılmaz, Abdülkadir Furkan Yıldız**
 "A Graph Transformation Strategy for Optimizing SpTRSV"
Başarım 2022: 7. Ulusal Yüksek Başarımlı Hesaplama Konferansı, İstanbul, Türkiye
 DOI: <https://doi.org/10.48550/arXiv.2206.05843>, electronic proceedings:
https://indico.truba.gov.tr/event/50/attachments/231/457/BASARIM2022_Proceedings.pdf
- [Başarım 20] **Buse Yılmaz, Didem Unat**
 "Seyrek Alt Üçgen Matris Çözümü için Graf Dönüşümü ve Özelleşmiş Kod Üretimi"
Başarım 2020: Ulusal Yüksek Başarımlı Hesaplama Konferansı, Ankara, Türkiye
 DOI: <https://doi.org/10.48550/arXiv.2103.11445>
- [EuroPar 20] **Najeeb Ahmad, Buse Yılmaz, Didem Unat.**
 "A Prediction Framework for Fast Sparse Triangular Solves"
Euro-Par 2020. Lecture Notes in Computer Science, vol 12247. Springer, Cham
 Best Artifact Award, acceptance rate: 24.5%
- [HPCAsia 20] **Buse Yılmaz, Buğra Sipahioğlu, Najeeb Ahmad, Didem Unat.**
 "Adaptive Level Binning: A New Algorithm for Solving Sparse Triangular Systems"
HPCAsia 2020 (ACM International Conf. on HPC in Asia-Pacific Region), Fukuoka, Japan
 DOI: <https://dl.acm.org/doi/10.1145/3368474.3368486>
- [SOAP 19] **Buse Yılmaz, Ilyas Turimbetov, Didem Unat.**
 "Program analysis for process migration"
Proceedings of the 8th ACM SIGPLAN International Workshop on State Of the Art in Program Analysis (SOAP) 2019
 DOI: <https://doi.org/10.1145/3315568.3329969>
- [GPCE 14] **Sam Kamin, María Jesús Garzarán, Barış Aktemur, Danqing Xu, Buse Yılmaz, and Zhongbo Chen**
 "Optimization by Runtime Specialization for Sparse Matrix-Vector Multiplication"
Proceedings of the 2014 International Conference on Generative Programming: Concepts and Experiences

[CSW 12] **Buse Yılmaz, Barış Aktemur**

"Improving Region Analysis for Parallel Analysis of Programs"

Computer Science Student Workshop 2012 (CSW 2012), Istanbul, Turkey.

[HIS 11] **Çağrı Yeşil, Buse Yılmaz, Erkan Korkmaz**

"Hybrid Local Search Algorithms on Graph Coloring Problem"

In Hybrid Intelligent Systems (HIS), 2011 11th International Conference on pp.468-473, 5-8 Dec. 2011, Malacca, Malaysia.

[ISDA 10] **Buse Yılmaz, Erkan Korkmaz**

"Representation Issue in Graph Coloring"

In Intelligent Systems Design and Applications (ISDA), 2010 10th International Conference on , vol., no., pp.1171-1176, Nov. 29 2010-Dec. 1 2010, Cairo, Egypt

Posters

[CSW 11] **Buse Yılmaz, Erkan Korkmaz**

"A Novel Meta-heuristic for Graph Coloring Problem: Simulated Annealing with Backtracking(SABT)"

Computer Science Student Workshop 2012 (CSW 2011), Istanbul, Turkey.

ACHIEVEMENTS

Bradley Research Fellowship

Bradley Dept. of Electrical and Computer Engineering, Virginia Tech, Blacksburg, USA

Aug. 2016 - Aug. 2017

2211 - National Scholarship Program for PhD Students from TÜBİTAK

Oct. 2011– Dec. 2015

Doctor of Philosophy in Computer Science/Engineering, GPA: 3.81

Dept. of Computer Engineering, Özyeğin University

Jan. 2016

Master of Science in Computer Engineering, Graduation with High Honor, GPA: 3.71

Dept. of Computer Engineering, Yeditepe University

May 2011

Bachelor of Science in Computer Engineering, Graduation with Honor, GPA: 3.52

Yeditepe University

May 2009

TOEFL: 107/120

2012

YOKDIL: 97.5/100

2021

PROFESSIONAL ACTIVITIES

Reviewer

- Software: Practice and Experience
- Concurrency and Computation: Practice and Experience, special issue for Başarım'20, Başarım'22
- CSW'[11-13]
- Subreviewer: IGSC'17, MASCOTS'19

Committee Member

- Başarım'20, Başarım'22
- External Review Committee Member: ICS'20
- Program Committee Member and Local Chair: CSW'11, CSW'12, CSW'13

SKILLS

Programming Languages: C, C++, Java, shell scripting, Python, Assembly (X86, ARM, PowerPC, MIPS)
Operating systems: Arch Linux, Ubuntu, Fedora