Abdurrahman Yaşar 🎓 🌐 in ⌂

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EDUCATION

Georgia Institute of Technology, USA, PhD. Computer Science   2015 - 2021 (Expected)
Advisor; Ümit V. Çatalyürek
> *Dissertation*: Towards Performance Portable Graph Algorithms

Bilkent University, Turkey, MSc. Computer Engineering   2013 - 2015
Advisor; Buğra Gedik
> *Dissertation*: Scalable Layout of Large Graphs on Disk

Galatasaray University, Turkey, B.Sc. Computer Engineering   2007 - 2012

SUMMARY | Ph.D. Candidate in Computer Science. Research interest in large-scale graph mining and processing. Seeking full time employment starting May'21.

HONORS &
AWARDS

- Travel Award: SIAM Conference on Parallel Processing for Scientific Computing   2020
- Two of the MIT/Amazon/IEEE HPEC 2018 Graph Challenge Innovation Awards   2019
- Travel Award: SIAM Conference on Computational Science and Engineering   2019
- One of the four invited students to Chesapeake Large-Scale Analytics Conference   2018
- One of the MIT/Amazon/IEEE HPEC 2018 Graph Challenge Champions   2018
- Excellence Study Grant Provided by the Embassy of France in Turkey   2013
- First Grade, Galatasaray University   2012
- Special Jury Award, Team ONGUN, IBM Software Academy, Turkey   2012
- Galatasaray Education Foundation (GEV) Bachelors Degree Fellowship   2008

EXPERIENCE

Georgia Institute of Technology, College of Computing, Atlanta GA   Aug. 2015 -
> *Graduate Research Associate*

Sandia National Laboratories, Albuquerque NM   May.-Aug'18 and May.-Aug'19
> *Graduate Summer Intern*

IBM Almaden Research Center, San Jose CA   May. 2016 - Aug. 2016
> *Graduate Summer Intern*

Inria - Lille Nord Europe, Equipe DART, Lille France   May. 2011 - Sep. 2011
> *Summer Intern*

RESEARCH

DATA/COMPUTATION PARTITIONING: Balanced distribution of the computation and the data to the processors. I studied different partitioning strategies.

- Efficient spatial partitioning techniques to speed up irregular problems.

- Computation space partitioning strategies to reduce the computational complexity.

- Layout techniques to increase memory utilization.

- C++ (OpenMP, TBB), Java (Hadoop)

A Novel Subgradient-based Method for d-Dimensional Rectilinear Partitioning   2020
submitted to IEEE International Parallel & Distributed Processing Symposium (IPDPS)
M. F. Balin, X. An, **A. Yaşar**, L. Song and Ü. V. Çatalyürek

On Symmetric Rectilinear Matrix Partitioning   2020
submitted to SIAM Journal on Scientific Computing (SISC)
A. Yaşar, M. F. Balin, X. An, K. Sancak and Ü. V. Çatalyürek

Distributed block formation and layout for disk-based management of large-scale graphs   2017
Distributed and Parallel Databases (DPDS)
A. Yaşar, B. Gedik, H. Ferhatosmanolu

Graph Mining & Block-based Algorithm Design:
High-performance processing of large scale sparse graphs is crucial and pervasive. I worked on several graph mining problems.

- Proposing a novel, fast graph merging algorithm.
- Providing coarse-grained and medium-grained triangle counting formulations.
- Implementing architecture (resource)-aware parallelization techniques.
- C++ (OpenMP, Cilk, TBB)

Scalable Triangle Counting on Distributed-Memory Systems (Graph Challenge Innovation Award) 2019
IEEE High Performance Extreme Computing Conference (HPEC)
S. Acer, **A. Yaşar**, S. Rajamanickam, M. M. Wolf and Ü. V. Çatalyürek

Fast Triangle Counting Using Cilk (Graph Challenge Champion) 2018
IEEE High Performance Extreme Computing Conference (HPEC)
A. Yaşar, S. Rajamanickam, M. M. Wolf, J. W. Berry, Ü. V. Çatalyürek

An Iterative Global Structure-Assisted Network Aligner 2018
ACM International Conference on Knowledge Discovery & Data Mining (KDD)
A. Yaşar and Ü. V. Çatalyürek

SiNA: A Scalable Iterative Network Aligner 2018
IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM)
A. Yaşar, B. Uçar and Ü. V. Çatalyürek

Performance Portability:
Heterogeneous computing environments requires designing flexible algorithms that can run well on various platforms. I worked on several arising issues.

- Porting graph merging algorithm to an emerging architecture (Emu Chick)
- Proposing a triangle counting formulation for heterogeneous systems
- C++ (OpenMP, Cilk, TBB, Kokkos), Cuda

bbTC: A Block-Based Triangle Counting Algorithm on Heterogeneous Environments 2020
submitted to IEEE Transactions on Parallel and Distributed Systems (TPDS)
A. Yaşar, S. Rajamanickam, J. W. Berry and Ü. V. Çatalyürek

Linear Algebra-Based Triangle Counting via Fine-Grained Tasking on Heterogeneous Environments
(Graph Challenge Innovation Award) 2019
IEEE High Performance Extreme Computing Conference (HPEC)
A. Yaşar, S. Rajamanickam, M. M. Wolf, J. W. Berry, J. S. Young and Ü. V. Çatalyürek

Programming strategies for irregular algorithms on the Emu Chick 2019
ACM Transactions on Parallel Computing (TOPC) - to appear
E. Hein, S. Eswar, **A. Yaşar**, B. Ucar, U. Catalyurek, T. Conte, J. Riedy, R. Vuduc, and J. S. Young

Patent	Distributing Data by Successive Spatial Partitioning	2017
	Patent : US10430104B2	
	A. Gupta, S. Seshadri, **A. Yaşar**	
Skills	• C++ (OpenMP, Cilk, TBB, Kokkos), C, Cuda, Python, Java	