

CURRICULUM VITAE

A. ERDEM SARIYÜCE

(Updated in 10/18)

Computer Science and Engineering Department
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Research Interests

Graph mining, social network analysis, network science, stream processing, temporal network analysis, combinatorial scientific computing, distributed and parallel computing

Education

- **Ohio State University** Columbus, OH
Ph.D. in Computer Science and Engineering, 2015
 - Thesis title: **Fast Algorithms for Large Scale Network Analytics**
 - Advisor: Ümit V. Çatalyürek (now at Georgia Tech)
- **Middle East Technical University** Ankara, Turkey
B.S. in Computer Engineering, 2010

Awards

- **LDRD Research Project, Principal Investigator, Sandia National Laboratories, 2016-2017**
‘Understanding the Hierarchy of Dense Subgraphs in Stationary and Temporally Varying Settings’
Funded under the Laboratory Directed Research and Development (LDRD) Program, \$210K/2 years
- **John von Neumann Postdoctoral Research Fellowship, 2015**
Two year fellowship in Sandia National Laboratories, supported by the Applied Mathematics program, part of the U.S. Department of Energy’s Office of Advanced Scientific Computing Research (ASCR)
- **Best Paper Runner-up, International Conference on World Wide Web (WWW) 2015**
- **Student Travel Grant for ASPLOS 2013, SDM 2013, SIGMOD 2013**

Experience

- **University at Buffalo, SUNY** Aug 2017 – Present
Assistant Professor (*Tenure track*)
Department of Computer Science and Engineering
- **Sandia National Laboratories, Livermore, CA** Sep 2015 – Aug 2017
John von Neumann Postdoctoral Fellow
- **Ohio State University, Columbus, OH** Sep 2010 – May 2015
Graduate Research Associate at HPC Lab under Ümit V. Çatalyürek
- **Sandia National Laboratories, Livermore, CA** May 2014 – Aug 2014
Intern, worked on dense subgraph discovery algorithms, resulted in [14]
Mentors: Ali Pinar and C. Seshadhri
- **IBM T. J. Watson Research Center, Yorktown Heights, NY** May 2013 – Aug 2013
Intern, worked on fault tolerance support for IBM Streams, resulted in [13]
Mentors: Gabriela Jacques-Silva and Kun-Lung Wu
- **IBM T. J. Watson Research Center, Yorktown Heights, NY** Jun 2012 – Sep 2012
Intern, worked on streaming k-core algorithms, resulted in [18]
Mentors: Gabriela Jacques-Silva and Kun-Lung Wu

Grants

- **UB Germination Space Program Seed Grant** Aug 2018
AI Drug Discovery to Characterise and Treat Every Disease \$25,000
with Ram Samudrala and Mingchen Gao

Refereed Journal Papers

1. [A. E. Sariyüce](#), C. Seshadhri, A. Pinar, Ü. V. Çatalyürek
[Nucleus Decompositions for Identifying Hierarchy of Dense Subgraphs](#)
TWEB 2017, ACM Transactions on the Web
2. [A. E. Sariyüce](#), K. Kaya, E. Saule, Ü. V. Çatalyürek
[Graph Manipulations for Fast Centrality Computation](#)
TKDD 2017, ACM Transactions on Knowledge Discovery from Data
3. [A. E. Sariyüce](#), B. Gedik, G. Jacques-Silva, K. Wu, Ü. V. Çatalyürek
[Incremental k-core Decomposition: Algorithms and Evaluation](#)
VLDBJ 2016, Very Large Data Bases Journal, 25(3): 425-447
4. [A. E. Sariyüce](#), B. Gedik, G. Jacques-Silva, K. Wu, Ü. V. Çatalyürek
[SONIC: Streaming Overlapping Community Detection](#)
DAMI 2016, Data Mining and Knowledge Discovery, 30(4): 819-847
5. [A. E. Sariyüce](#), E. Saule, K. Kaya, Ü. V. Çatalyürek
[Incremental Closeness Centrality in Distributed Memory](#)
ParCo 2015, Parallel Computing, 47: 3-18
6. [A. E. Sariyüce](#), E. Saule, K. Kaya, Ü. V. Çatalyürek
[Regularizing Graph Centrality Computations](#)
JPDC 2015, Journal of Parallel and Distributed Computing, 76(C): 106-119

Refereed Conference and Workshop Papers

7. [A. E. Sariyüce](#), C. Seshadhri, A. Pinar
[Local Algorithms for Hierarchical Dense Subgraph Discovery](#)
VLDB 2019, International Conference on Very Large Data Bases
8. M. Y. Özkaya, [A. E. Sariyüce](#), A. Pinar, Ü. V. Çatalyürek
[Local Detection of Critical Nodes in Active Graphs](#)
ASONAM 2018, IEEE/ACM Int. Conf. on Adv. in Social Networks Analysis & Mining (AR: 31%)
9. S. Sanei-Mehri, [A. E. Sariyüce](#), S. Tirthapura
[Butterfly Counting in Bipartite Networks](#)
KDD 2018, ACM International Conference on Knowledge Discovery and Data Mining (AR: 18.4%)
10. R. Laishram, [A. E. Sariyüce](#), Tina Eliassi-Rad, A. Pinar, S. Soundarajan
[Measuring and Improving the Core Resilience of Networks](#)
WWW 2018, The Web Conference (AR: 14.8%)
11. [A. E. Sariyüce](#), A. Pinar
[Peeling Bipartite Networks for Dense Subgraph Discovery](#)
WSDM 2018, ACM International Conference on Web Search and Data Mining (AR: 16.1%)
12. [A. E. Sariyüce](#), A. Pinar
[Fast Hierarchy Construction for Dense Subgraphs](#)
VLDB 2017, International Conference on Very Large Data Bases (AR: 17.7%)
13. G. Jacques-Silva, F. Zheng, D. Debrunner, K. Wu, V. Dogaru, E. Johnson, M. Spicer, [A. E. Sariyüce](#)
[Consistent Regions: Guaranteed Tuple Processing in IBM Streams](#)
VLDB 2016, International Conference on Very Large Data Bases, Industrial Track (AR: 33.3%)

14. A. E. Saryüce, C. Seshadhri, A. Pınar, Ü. V. Çatalyürek
[Finding the Hierarchy of Dense Subgraphs using Nucleus Decompositions](#) (Best Paper Runner-up)
WWW 2015, International World Wide Web Conference (AR: 14.1%)
15. A. E. Saryüce, E. Saule, K. Kaya, Ü. V. Çatalyürek
[Hardware/Software Vectorization for Closeness Centrality on Multi-/Many-Core Architectures](#)
IPDPSW 2014, Workshop on Multithreaded Architectures and Applications (MTAAP)
 IEEE International Parallel & Distributed Processing Symposium
16. A. E. Saryüce, K. Kaya, E. Saule, Ü. V. Çatalyürek
[Incremental Algorithms for Closeness Centrality](#)
BigData 2013, IEEE International Conference on Big Data (AR: 37.3%)
17. A. E. Saryüce, E. Saule, K. Kaya, Ü. V. Çatalyürek
[STREAMER: A Distributed Framework for Incremental Closeness Centrality Computation](#)
Cluster 2013, IEEE Cluster Conference (AR: 31.2%)
18. A. E. Saryüce, B. Gedik, G. Jacques-Silva, K. Wu, Ü. V. Çatalyürek
[Streaming Algorithms for k-core Decomposition](#)
VLDB 2013, International Conference on Very Large Data Bases (AR: 22.7%)
19. A. E. Saryüce, E. Saule, K. Kaya, Ü. V. Çatalyürek
[Shattering and Compressing Networks for Betweenness Centrality](#)
SDM 2013, SIAM International Conference on Data Mining (AR: 25.5%)
20. A. E. Saryüce, K. Kaya, E. Saule, Ü. V. Çatalyürek
[Betweenness Centrality on GPUs and Heterogeneous Architectures](#)
ASPLOS 2013, Workshop on General Purpose Processing Using GPUs (GPGPU)
 ACM International Conference on Architectural Support for Programming Languages and Operating Systems (AR: 39.4%)
21. A. E. Saryüce, E. Saule, Ü. V. Çatalyürek
[Scalable Hybrid Implementation of Graph Coloring using MPI and OpenMP](#)
IPDPSW 2012, Workshop on Parallel Computing and Optimization (PCO)
 IEEE International Parallel & Distributed Processing Symposium
22. A. E. Saryüce, E. Saule, Ü. V. Çatalyürek
[Improving Graph Coloring on Distributed Memory Parallel Computers](#)
HiPC 2011, IEEE International Conference on High Performance Computing (AR: 19.4%)

Submitted Papers and Technical Reports

1. A. E. Saryüce, E. Saule, Ü. V. Çatalyürek
[On Distributed Graph Coloring with Iterative Recoloring](#), [arXiv: 1407.6745](#)

Talks

1. **ACM SIGKDD Conference On Knowledge Discovery And Data Mining** Aug 2018
 Butterfly Counting in Bipartite Networks London, UK
2. **ACM SIGMOD International Conference on Management of Data** June 2018
 Fast Hierarchy Computation for Dense Subgraphs Houston, TX
3. **Invited Talk, University at Buffalo CDSE days** April 2018
 Dense Subgraphs with Hierarchical Relations: Models, Algorithms, Applications Buffalo, NY
4. **Web Search and Data Mining Conference (WSDM)** Feb 2018
 Peeling Bipartite Networks for Dense Subgraph Discovery Los Angeles, CA

5. **Invited Talk, INFORMS Annual Meeting** Oct 2017
Finding the Hierarchy of Dense Subgraphs Houston, TX
6. **Invited Talk, Complex Network Seminar, University at Buffalo** Oct 2017
Finding the Hierarchy of Dense Subgraphs using Nucleus Decompositions Buffalo, NY
7. **Graph Exploitation Symposium (GraphEx), organized by MIT Lincoln Lab** May 2017
Parallel Local Algorithms for Core, Truss, and Nucleus Decompositions Lexington, MA
8. **Invited Talk, University at Buffalo** May 2017
Parallel Local Algorithms for Core, Truss, and Nucleus Decompositions Buffalo, NY
9. **SIAM Conference on Computational Science and Engineering (SIAM CSE)** Mar 2017
Finding Dense Subgraphs with Hierarchical Relations in Real-world Networks Atlanta, GA
10. **Invited Talk, University at Buffalo** Feb 2017
Fast Algorithms for Mining and Processing Real-world Graphs Buffalo, NY
11. **LDRD Program Review Meeting, Sandia National Laboratories** Dec 2016
Understanding the Hierarchy of Dense Subgraphs Albuquerque, NM
12. **SIAM Conference on Combinatorial Scientific Computing (SIAM CSC)** Oct 2016
Fast Hierarchy Construction for Dense Subgraphs Albuquerque, NM
13. **Dean Seminar, Sandia National Laboratories** Aug 2016
Finding Dense Subgraphs and Hierarchy Construction: Models and Algorithms Livermore, CA
14. **Workshop on Algorithms for Modern Massive Data Sets (MMDS)** Jun 2016
Fast Hierarchy Construction for Dense Subgraphs Berkeley, CA
15. **Graph Exploitation Symposium (GraphEx), organized by MIT Lincoln Lab** May 2016
Fast Algorithms for Finding Dense Subgraphs with Hierarchy Lexington, MA
16. **Computer Science & Eng. Dept. Poster Exhibition, Ohio State University** Feb 2015
Finding the Hierarchy of Dense Subgraphs using Nucleus Decompositions Columbus, OH
17. **Invited talk, Sandia National Laboratories** Jan 2015
Fast and High Quality Dense Subgraph Discovery Algorithms Albuquerque, NM
18. **Intern talk, Sandia National Laboratories** Aug 2014
Finding the Hierarchy of Dense Subgraphs using Nucleus Decompositions Livermore, CA
19. **Biomedical Informatics Department Retreat, Ohio State University** Jan 2014
Fast Algorithms for Large-Scale Network Analytics Columbus, OH
20. **IEEE Cluster Conference** Sep 2013
STREAMER: A Distributed Framework for Incremental Closeness Cent. Comp. Indianapolis, IN
21. **SIAM Data Mining Conference (SDM)** May 2013
Shattering and Compressing Networks for Betweenness Centrality Austin, TX
22. **Workshop on General Purpose Processing Using GPUs (GPGPU)** Mar 2013
Betweenness Centrality on GPUs and Heterogeneous Architectures Houston, TX
23. **Invited talk, Bilkent University Computer Engineering Department** Nov 2012
Streaming Algorithms for k-core Decomposition Ankara, Turkey
24. **Intern talk, IBM T.J. Watson Researcher Center** Sep 2012
Streaming Algorithms for k-core Decomposition Hawthorne, NY
25. **SIAM Conference on Parallel Processing for Scientific Computing (SIAM PP)** Feb 2012
Considerations on Parallel Graph Coloring Algorithms Savannah, GA

Teaching

- [CSE 610](#): Special Topics in Network Science Spring 2018
- [CSE 701](#): Large-Scale Graph Mining Fall 2017, Fall 2018

Professional Service

Program Committee

- International Conference on Parallel Processing (ICPP), 2019
- The Web Conference (WWW), 2019
- SIAM Data Mining Conference (SDM), 2019
- International Conference on Very Large Data Bases (VLDB), 2019
- IEEE Cluster Conference (Cluster), 2018
- ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (SIGKDD), 2018
- SIAM Data Mining Conference (SDM), 2018
- IEEE International Parallel and Distributed Processing Symposium (IPDPS), 2018
- The Programming Models and Algorithms Workshop (PMAW) in conj. with IPDPS, 2018
- Workshop on High Performance Computing for Big Data (HPC4BD) in conj. with ICPP, 2016, 2017

Reviewer

- Very Large Data Bases Journal (VLDBJ)
- European Journal of Operational Research (EJOR)
- SIAM Journal on Mathematics of Data Science (SIMODS)
- PeerJ Computer Science
- IEEE Transactions on Parallel and Distributed Systems (TPDS)
- Data Mining and Knowledge Discovery (DAMI)
- Journal of Parallel and Distributed Computing (JPDC)
- Parallel Computing (ParCo)
- Journal of Machine Learning (JMLR)
- IEEE Transactions on Knowledge and Data Engineering (TKDE)
- Journal of Complex Networks (COMNET)
- World Wide Web journal
- IEEE International Parallel and Distributed Processing Symposium (IPDPS)
- IEEE Cluster Conference
- IEEE International Conference On High Performance Computing (HiPC)
- International Conference on Parallel Processing (ICPP)
- Supercomputing Conference (SC)
- ACM International Conference on Management of Data (SIGMOD)
- International World Wide Web Conference (WWW)
- ACM Conference on Knowledge Discovery and Data Mining (SIGKDD)

Panelist

- NSF Proposal Review Panelist, 2018