

CURRICULUM VITAE

A. ERDEM SARIYÜCE

(Updated in 5/18)

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, 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 [12]
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 [11]
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 [16]
Mentors: Gabriela Jacques-Silva and Kun-Lung Wu

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. 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%)
8. 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%)
9. 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%)
10. A. E. Sariyüce, A. Pinar
[Fast Hierarchy Construction for Dense Subgraphs](#)
VLDB 2017, International Conference on Very Large Data Bases (AR: 17.7%)
11. 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%)
12. A. E. Sariyüce, C. Seshadhri, A. Pinar, 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%)
13. A. E. Sariyüce, 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
14. A. E. Sariyüce, K. Kaya, E. Saule, Ü. V. Çatalyürek
[Incremental Algorithms for Closeness Centrality](#)
BigData 2013, IEEE International Conference on Big Data (AR: 37.3%)
15. A. E. Sariyüce, E. Saule, K. Kaya, Ü. V. Çatalyürek
[STREAMER: A Distributed Framework for Incremental Closeness Centrality Computation](#)
Cluster 2013, IEEE Cluster Conference (AR: 31.2%)

16. A. E. Sariyüce, 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%)
17. A. E. Sariyüce, 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%)
18. A. E. Sariyüce, 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%)
19. A. E. Sariyüce, 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
20. A. E. Sariyüce, 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. M. Y. Özkaya, A. E. Sariyüce, A. Pinar, Ü. V. Çatalyürek
Active Betweenness Cardinality: Algorithms and Applications, [arXiv: 1711.10634](#)
2. A. E. Sariyüce, C. Seshadhri, A. Pinar
Parallel Local Algorithms for Core, Truss, and Nucleus Decompositions, [arXiv: 1704.00386](#)
3. A. E. Sariyüce, E. Saule, Ü. V. Çatalyürek
On Distributed Graph Coloring with Iterative Recoloring, [arXiv: 1407.6745](#)

Talks

1. **Invited Talk, UB CDSE days** April 2018
Dense subgraphs with hierarchical relations: Models, Algorithms, Applications Buffalo, NY
2. **Invited Talk, INFORMS Annual Meeting** Oct 2017
Finding the Hierarchy of Dense Subgraphs Houston, TX
3. **Invited Talk, Complex Network Seminar, University at Buffalo** Oct 2017
Finding the Hierarchy of Dense Subgraphs using Nucleus Decompositions Buffalo, NY
4. **Graph Exploitation Symposium (GraphEx), organized by MIT Lincoln Lab** May 2017
Parallel Local Algorithms for Core, Truss, and Nucleus Decompositions (poster) Lexington, MA
5. **Invited Talk, University at Buffalo** May 2017
Parallel Local Algorithms for Core, Truss, and Nucleus Decompositions Buffalo, NY
6. **SIAM Conference on Computational Science and Engineering (SIAM CSE)** Mar 2017
Finding Dense Subgraphs with Hierarchical Relations in Real-world Networks Atlanta, GA
7. **Invited Talk, University at Buffalo** Feb 2017
Fast Algorithms for Mining and Processing Real-world Graphs Buffalo, NY
8. **LDRD Program Review Meeting, Sandia National Laboratories** Dec 2016
Understanding the Hierarchy of Dense Subgraphs Albuquerque, NM
9. **SIAM Conference on Combinatorial Scientific Computing (SIAM CSC)** Oct 2016
Fast Hierarchy Construction for Dense Subgraphs Albuquerque, NM

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| 10. Dean Seminar, Sandia National Laboratories | Aug 2016 |
| Finding Dense Subgraphs and Hierarchy Construction: Models and Algorithms | Livermore, CA |
| 11. Workshop on Algorithms for Modern Massive Data Sets (MMDS) | Jun 2016 |
| Fast Hierarchy Construction for Dense Subgraphs (poster) | Berkeley, CA |
| 12. Graph Exploitation Symposium (GraphEx), organized by MIT Lincoln Lab | May 2016 |
| Fast Algorithms for Finding Dense Subgraphs with Hierarchy (poster) | Lexington, MA |
| 13. Computer Science & Eng. Dept. Poster Exhibition at Ohio State | Feb 2015 |
| Finding the Hierarchy of Dense Subgraphs using Nucleus Decompositions (poster) | Columbus, OH |
| 14. Invited talk at Sandia National Laboratories | Jan 2015 |
| Fast and High Quality Dense Subgraph Discovery Algorithms | Albuquerque, NM |
| 15. Internship Exit talk at Sandia National Laboratories | Aug 2014 |
| Finding the Hierarchy of Dense Subgraphs using Nucleus Decompositions | Livermore, CA |
| 16. Biomedical Informatics Department Retreat at Ohio State | Jan 2014 |
| Fast Algorithms for Large-Scale Network Analytics (poster) | Columbus, OH |
| 17. IEEE Cluster Conference | Sep 2013 |
| STREAMER: A Distributed Framework for Incremental Closeness Cent. Comp. | Indianapolis, IN |
| 18. SIAM Data Mining Conference (SDM) | May 2013 |
| Shattering and Compressing Networks for Betweenness Centrality | Austin, TX |
| 19. Workshop on General Purpose Processing Using GPUs (GPGPU) | Mar 2013 |
| Betweenness Centrality on GPUs and Heterogeneous Architectures | Houston, TX |
| 20. Invited talk at Bilkent University Computer Engineering Department | Nov 2012 |
| Streaming Algorithms for k-core Decomposition | Ankara, Turkey |
| 21. Internship Exit talk at IBM T.J. Watson Researcher Center | Sep 2012 |
| Streaming Algorithms for k-core Decomposition | Hawthorne, NY |
| 22. 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

Professional Service

Program Committee

- IEEE Cluster Conference (Cluster), 2018
- International Conference on Very Large Data Bases (VLDB), 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

- Journal of Parallel and Distributed Computing (JPDC)
- Parallel Computing (ParCo)
- IEEE Transactions on Parallel and Distributed Systems (TPDS)
- Journal of Machine Learning (JMLR)
- Data Mining and Knowledge Discovery (DAMI)
- IEEE Transactions on Knowledge and Data Engineering (TKDE)

- PeerJ Computer Science
- 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)