

# Sureyya Emre Kurt

semre@cs.utah.edu | 3722 S 700 W #A301, S Salt Lake City, UT, 84119 | 740- 825-9100

## EDUCATION

University of Utah, Salt Lake City, Utah

Master of Science in Computer Science, Aug 2019 – Present  
Architecture aware algorithm design: exploiting memory hierarchy to minimize data movement on Multicores and GPUs (Advisor: P Sadayappan)

The Ohio State University, Columbus, Ohio

Master of Science in Computer Science, Aug 2016 – Aug 2019  
Direction optimized Sparse Matrix Multiplication for GraphBLAS (Advisor: P Sadayappan)

Bilkent University, Ankara, Turkey

Master of Science in Computer Engineering, Sep 2014 – Jun 2016  
Finding hierarchy in directed social networks

## EXPERTISE

- Primary focus: High performance computing, data movement minimization, graph computations
- Coursework: Parallel Computing I&II, Computer Architecture, Operating Systems, Artificial Intelligence I&II, Algorithms I&II, Distributed Systems, Programming Languages
- Software: C++, C, Cuda, Python, MPI

## ACADEMIC PUBLICATIONS

**Süreyya Emre Kurt**, Vineeth Thumma, Changwan Hong, Aravind Sukumaran-Rajam, and P Sadayappan.

Characterization of data movement requirements for sparse matrix computations on GPUs. In IEEE 24th International Conference on High Performance Computing (HiPC), 2017.

- Found lower and upper bounds on data movement for SpMV and SpGEMM kernels on Cuda
- Proposed a reordering scheme to improve run-time of the kernels
- Improved state-of-the-art SpGEMM kernel on Cuda by improving utilization

Changwan Hong, Aravind Sukumaran-Rajam, Bortik Bandyopadhyay, Jinsung Kim, **Süreyya Emre Kurt**, Israt Nisa, Shivani Sabhlok, Ümit V Çatalyürek, Srinivasan Parthasarathy, and P Sadayappan. Efficient sparse-matrix multi-vector product on GPUs. In Proceedings of the 27th International Symposium on High-Performance Parallel and Distributed Computing (HPDC), 2018.

- Reordering matrices to further improve the performance of SpMM kernel

Israt Nisa, Aravind Sukumaran-Rajam, **Süreyya Emre Kurt**, Changwan Hong, P Sadayappan . Sampled Dense Matrix Multiplication for High-Performance Machine Learning. In IEEE 25th International Conference on High Performance Computing (HiPC), 2018.

- Found lower bounds on data movement for SDDMM (Sampled Dense Dense Matrix Multiplication) kernel
- Developed a model to decide various parameters in the kernel

## ACHIEVEMENTS AND ACTIVITIES

- Gold (2009) and Silver (2007) medalist at the International Mathematical Olympiads (IMO)
- Gold (2009) and Silver (2007) medalist at the Balkan Mathematical Olympiads (BMO)
- Coordinator at several Mathematical Olympiads (BMO, JBMO, EGMO)

## WORK EXPERIENCE

Lawrence Berkeley National Laboratory, Berkeley, California

Summer Internship, May, 2019 – July, 2019

- Direction Optimized Sparse Matrix Multiplication (Advisor: Aydin Buluc)

Pacific Northwest National Laboratories, Richland, Washington

Summer Internship, May, 2018 – Aug, 2018

- Developing and testing several reordering algorithms for SpMM and SpGEMM kernels both on CPU and CUDA (Advisor: Mahantesh Halappanvar)