

SORS: Efficient dynamic graph algorithms on GPU graph frameworks

Objectives

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Abstract: Real world data composed of entities and relationships can often be represented within a graph structure; this methodology has become ubiquitous. Analyzing graphs with graph analytics can offer valuable insights for social networking, web searching, and various applications in different areas. Real world networks are continuously evolving by their nature and it has been observed that the changes occur with an extremely high rate in massively sized graphs. Efficient graph data processing is challenging due to its irregularity and intensive computation.

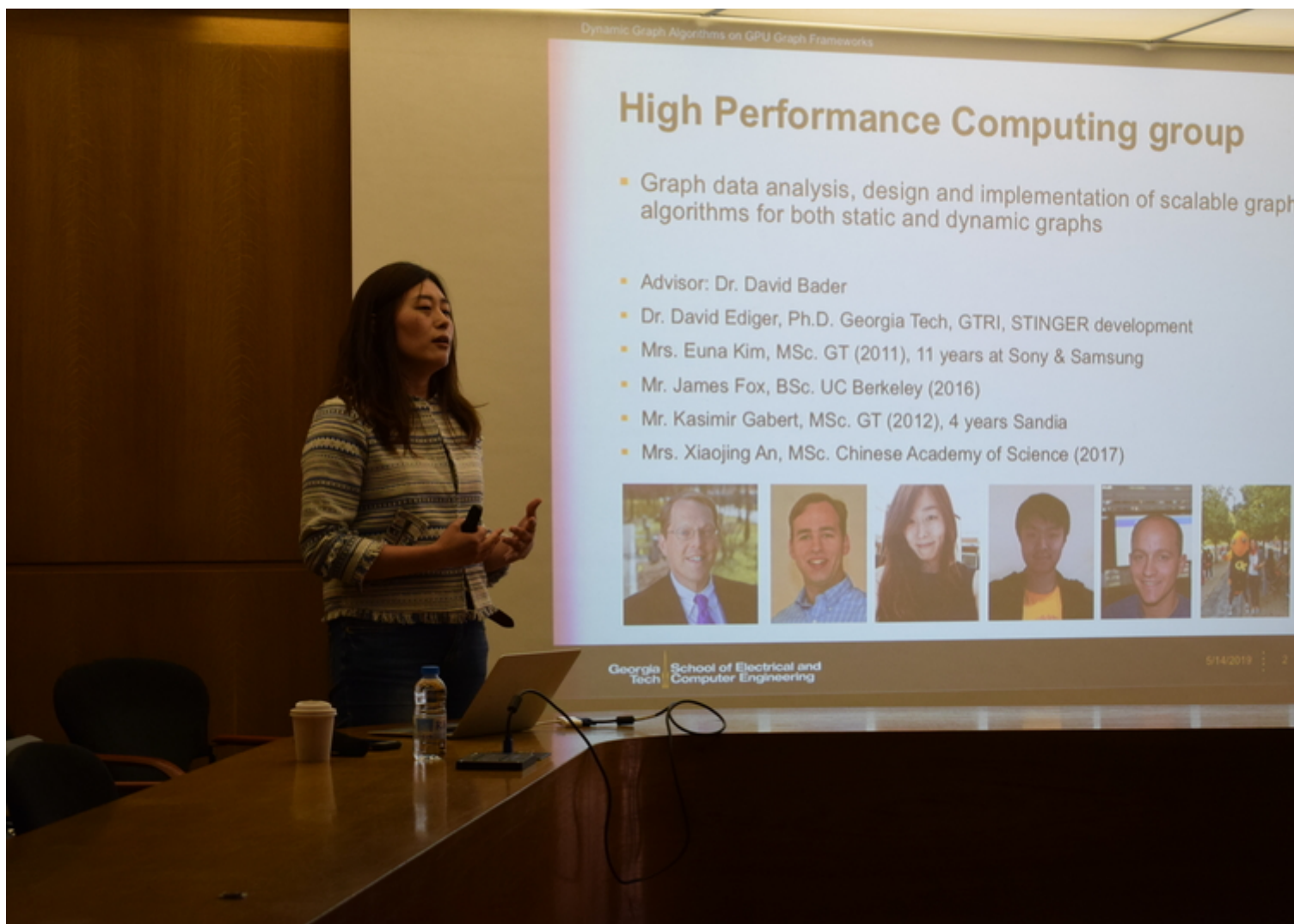
In this talk I will introduce choices of hardware architectures, graph frameworks, and programming models to process graph data efficiently briefly, in particular on GPUs, and will discuss of graph benchmarks and their dynamic algorithms using the PageRank algorithm as an example.



Bio: Euna Kim is a PhD student

in the field of electrical and computer engineering at the Georgia Institute of Technology. She received her BS in computer engineering (2002) from Pusan National University and MS in Computer Science (2011) from the Georgia Institute of Technology. Prior to returning to Georgia Tech to pursue a PhD in 2015, she worked for Sony, developing embedded system software for car audio systems and Digital TV, and for Samsung, dealing with Android framework troubleshooting and managing the first FeliCa (RFID smart card system in Japan) project for Galaxy smartphones. During her PhD program, she worked at ORNL (Oak Ridge National Laboratory) by participating in an ASTRO (Advanced Short Term Research Opportunity) program to explore performance comparisons among GPU-based graph frameworks.

Her research interests include graph data analysis and performance enhancement in HPC, specifically for dynamic graphs: hardware configuration, data structures, parallel programming, CPU and GPU-based graph frameworks, application characterization, and dynamic algorithms. She is a static and dynamic PageRank algorithm developer for Hornet, which is an open-source GPU -based graph framework for dynamic graphs. She is currently involved in DARPA HIVE project to design a new chip architecture optimized for graph analytics.



Speakers

Euna Kim is a PhD student in the field of electrical and computer engineering at the Georgia Institute of Technology.

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