

[Dagstuhl Seminar 14462] Systems and Algorithms for Large-scale Graph Analytics

<b>Monday, Nov. 10</b>			
8:45 - 9:00	Seminar introduction		Organisers
9:00 - 9:40	Participant introduction (one slide each in 50 seconds)		All
9:40 - 11:00	<b>1. Graph/Parallel Processing Systems (1)</b>		Chair: Amitabha
	1 Oskin, Mark (U. Washington): Grappa: A Runtime System for High-Performance Graph Analyses on Commodity Clusters		
	2 Schelter, Sebastian (TU Berlin): Issues Encountered in Distributed Graph Processing		
	3 Lenharth, Andrew (U. Texas Austin): Graph Analytics with the Galois System		
11:00 - 11:20	Coffee		
11:20 - 12:15	<b>2. Graph/Parallel Processing Systems (2)</b>		Chair: Luis
	1 Daudjee, Khuzaima (U. Waterloo): An Evaluation of Pregel-like Graph Processing Systems		
	2 Keeton, Kimberly (HP): Rethinking graph processing with The Machine		
12:15 - 13:30	Lunch		
13:30 - 14:15	<b>2. Graph/Parallel Processing Systems (2) - continued</b>		
	3 Boldi, Paolo (U. Milan): HyperBall: in-core computation of geometric centralities		
	Session 1&2 - wrap-up discussion on system overview		
14:15 - 15:30	<b>3. Storage (e.g. SSDs), I/O, Memory (e.g. RDMA), Data format</b>		Chair: Terence
	1 Pearce, Roger (LLNL): Traversal of Massive Scale-free Graphs on HPC with NVRAM		
	2 Zwaenepoel, Willy (EPFL): Graph Processing from Secondary Storage		
	3 Dalibard, Valentin (U. Cambridge):SSD Prefetching for Large Graph Traversal 10 mins		
	Session 3 - wrap-up discussion		
15:30 - 16:00	Coffee		
16:00 - 17:15	<b>4. HW/SW based acceleration (GPU, APU, FPGA, Vectorization..)</b>		Chair: Eiko
	1 Ceze, Luis (U. Washington): In-network processing and NVRAM in Grappa		
	2 Owens, John (UC Davis): Gunrock: High-Performance, High-Level Graph Computation on GPUs		
	3 Nilakant, Karthik (U. Cambridge): Using Integrated GPUs for Accelerated Graph Traversal 10 mins		
	Session 4 wrap-up discussion		
17:15 - 18:00	<b>Murray, Derek ( ex MSR) video + via Skype Q&amp;A + wrap-up open discussion of Day 1</b>		
18:00	Dinner -		
20:00	Wine -		
<b>Tuesday, Nov. 11</b>			
8:45 - 10:30	<b>5. Query/Programming Languages and Applications</b>		Chair: Hassan
	1 Chafi, Hassan/Hong, Sungpack (Oracle): Graph Languages with Benefits		
	2 Grust, Torsten (U. Tübingen): Query Languages that Taste Like Programming Languages		
	3 Ulrich, Alexander (U. Tübingen): Flattening-Based Query Compilation		
	4 Lehner, Wolfgang (TU Dresden): Core Graph Processing Primitives within SAP HANA		
	Session 5 wrap-up discussion		
10:30 - 10:45	Coffee		
10:45 - 12:15	<b>6. Distributed DB, Graph DB</b>		Chair: Willy
	1 Chafi, Hassan/Hong, Sungpack (Oracle): Graph Database, do we need to reinvent the wheel		
	2 Plantikow, Stefan (Neo4J): Advancing Graph Query Languages: Expressivity vs. Practicality		
	3 Chen, Lei (HKUST): Efficient Large Scale Graph Analysis		
	Session 6 partial discussion		
12:15 - 13:30	Lunch		
13:30 - 13:55	<b>6. Distributed DB, Graph DB - continued</b>		
	4 Khan, Arijit (ETH): Towards Querying Big-Graphs		
13:55 - 15:20	<b>7. Parallel Processing (e.g. Partitioning)</b>		Chair: Roger
	1 Samas Girdzijauskas (SICS): Distributed Algorithms for Balanced Graph Partitioning and Community Detection		
	2 Cuadrado, Felix (UC London QM): Taming Graph Dynamics at Scale		
	3 Ozsu, Tamer (U. Waterloo): An Initial Attempt to Classify Graph Processing Approaches and Systems		
	Session 7 wrap-up discussion		
15:20 - 15:30	Joint session logistics		
15:30 - 16:00	Coffee + starting joint session - introduction		
16:00 - 18:00	<b>Joint Session with 14461 (High-performance Graph Algorithms and Applications in Computational Science)</b>		Chair:Organisers
	<b>1 What should the joint effort be between theory and general system framework?</b>		
	<b>2 How to map computation model to underlying systems (e.g. via programming, language)?</b>		
	<b>3 Industry vs Academia - what are the challenges ?</b>		
	1 Sanders (Parallel multicriteria shortest paths ) 22 mins		
	2 Lumsdaine (Distributed control for scalable parallel algorithms) 22 mins		
	1 Hassan/Sungpack (Oracle): Challenges for Popularizing Graph Applications 15 mins		
	2 Terrence (HP): Graph Analysis Platforms and Evaluations Thereof 15 mins		
	3 Luis/Mark (UW): TBD 15 mins		
	<b>Open Discussion (0.5H)</b>		
18:00	Dinner -		
20:00	Wine -		
<b>Wednesday Nov. 12</b>			
9:00 - 11:00	<b>Challenges, Future Direction Discussion</b>		Chair:Organisers
	<b>Breakout Sessions:</b>		
	<b>1 Benchmarking/Framework Comparison</b>		Lead: Terrence
	<b>2 Challenges to go forwards: Storage, processing, and programmability</b>		Lead: Luis/Mark
	<b>3 How does DB merge with current processing approaches?</b>		Lead: Hassan
	<b>Open Discussion</b>		
	1 Benchmarking (c.f. Graph500, synthetic large graphs, real world graphs)		
	2 Challenges going forward: is it in storage, processing, data movement or programmability		
	3 Graph analysis platforms for different users		
	4 Incremental operation		
	5 Transactional processing (c.f. property graph)		
	6 Future of external memory		
11:00 - 11:15	Coffee		
11:15 - 12:15	<b>Wrap-up, Publication, Future activities</b>		Organisers
12:15 - 14:00	Lunch		