

Dependency-Driven Disk-based Graph Processing

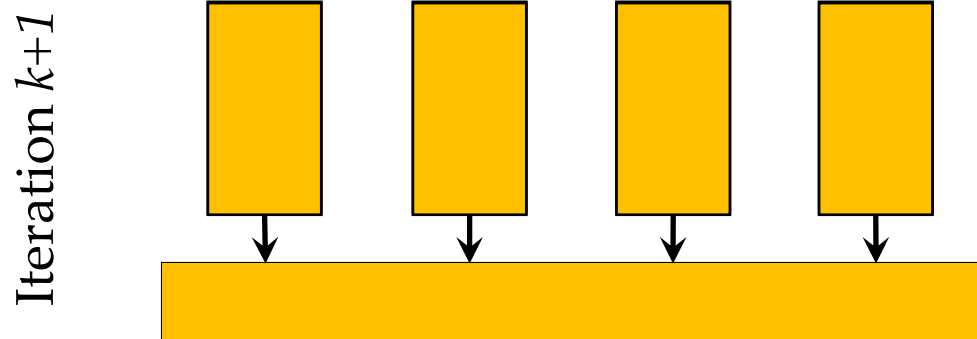
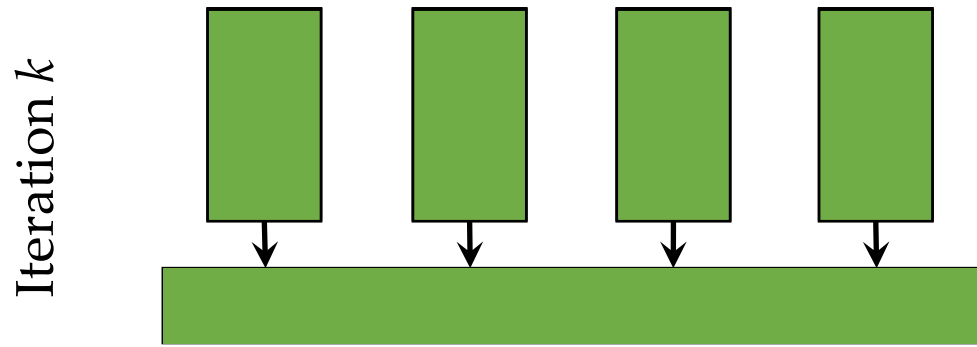
Keval Vora

Simon Fraser University

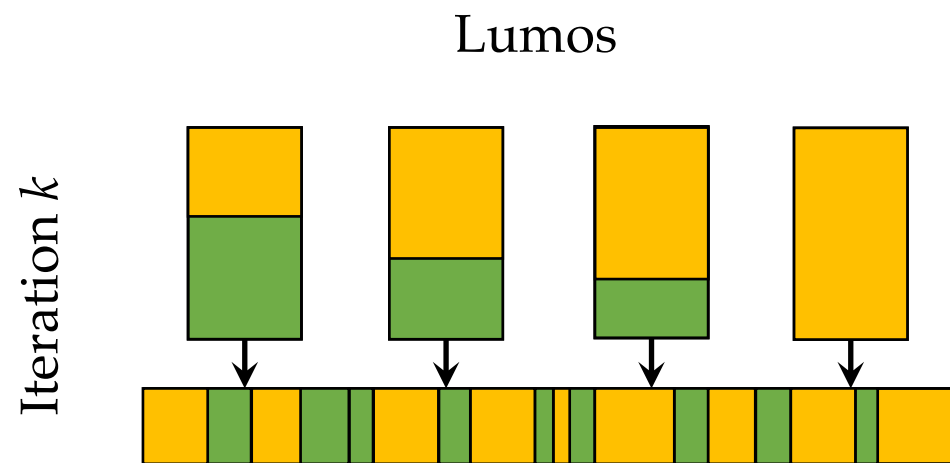
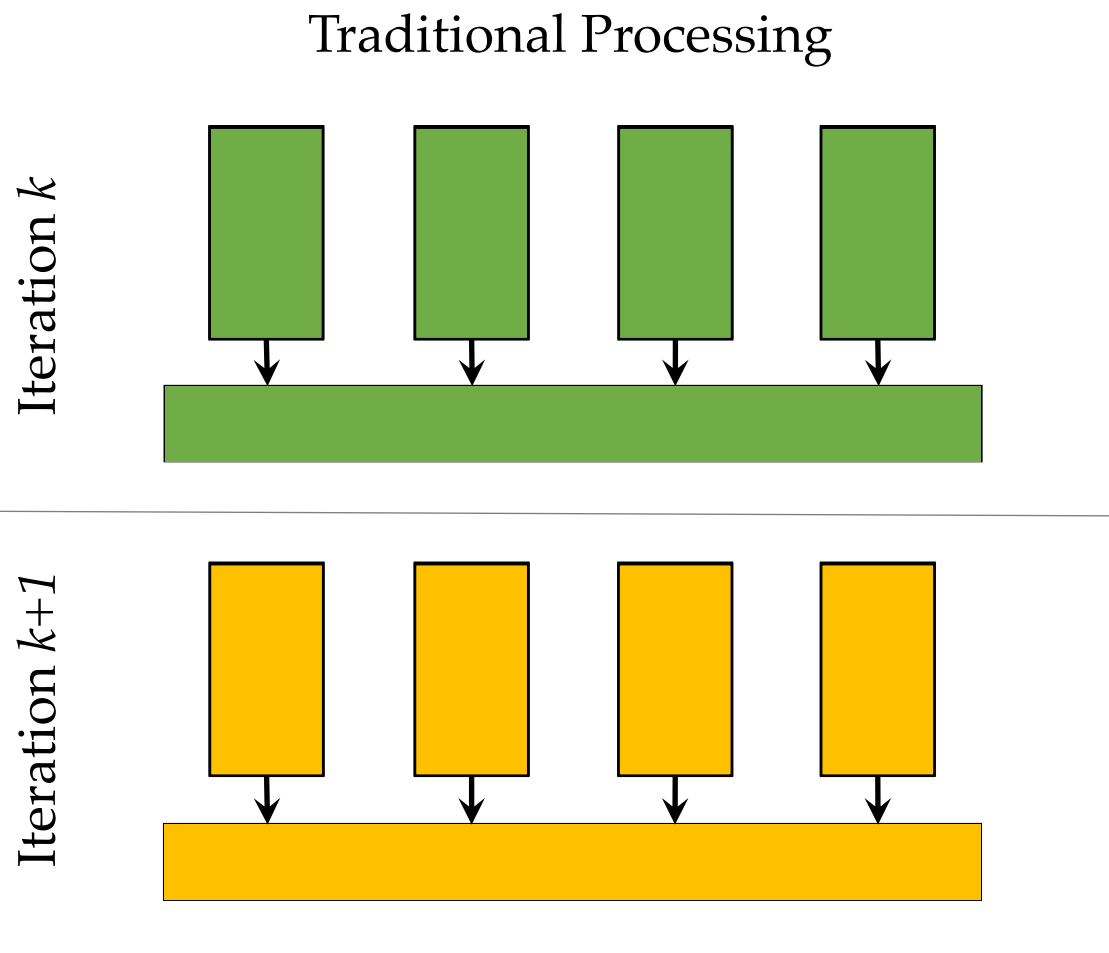
<https://github.com/pdclab/lumos>

Lumos: Out-of-order + Out-of-core

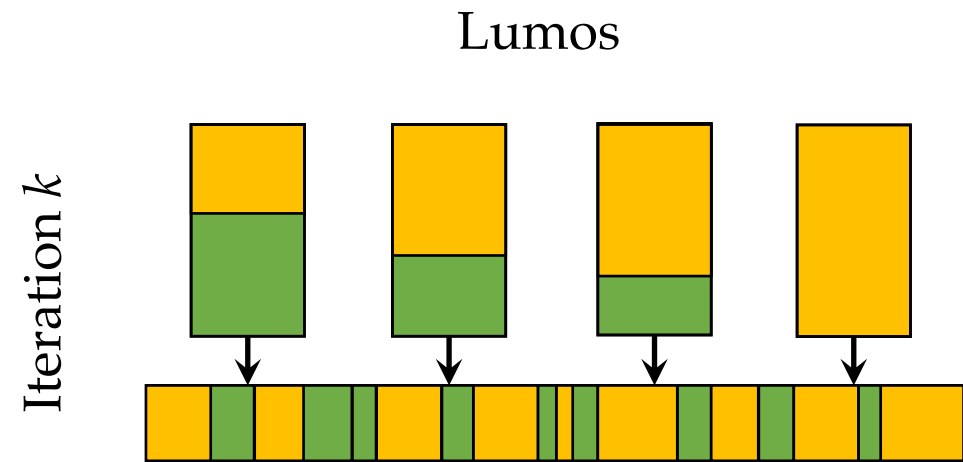
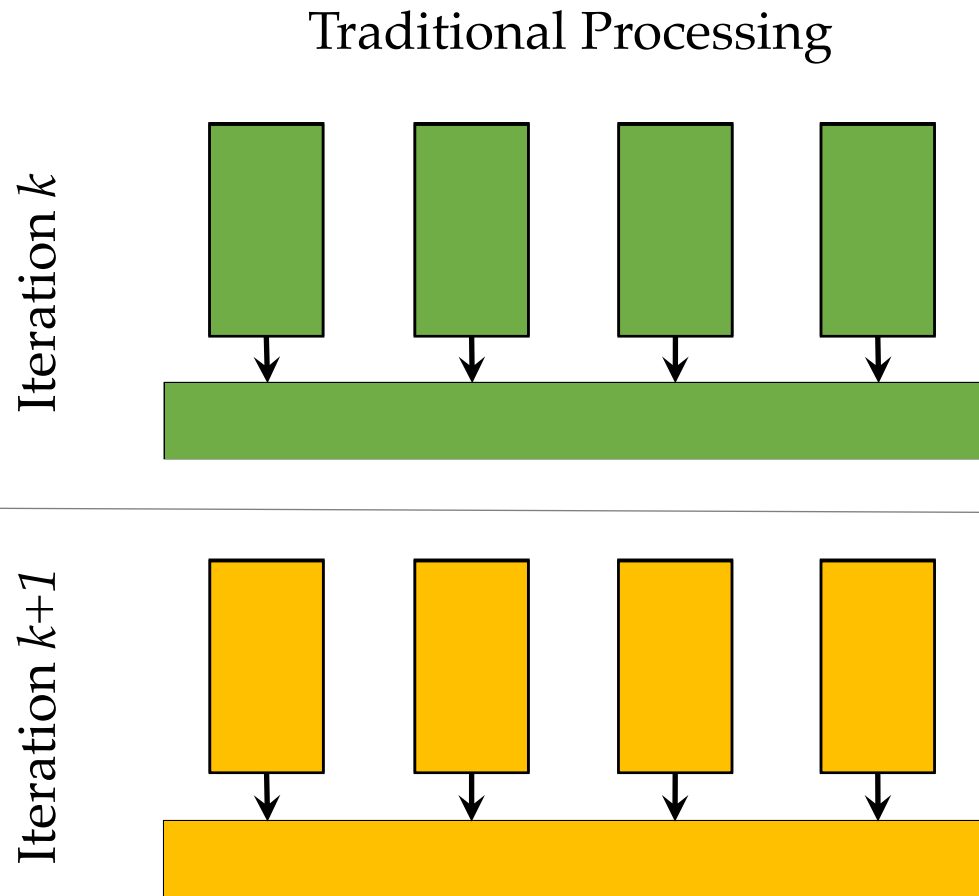
Traditional Processing



Lumos: Out-of-order + Out-of-core



Lumos: Out-of-order + Out-of-core



- **Dependency-driven** value propagation
- **Bulk Synchronous Parallel** semantics

Lumos: Challenges & Overview

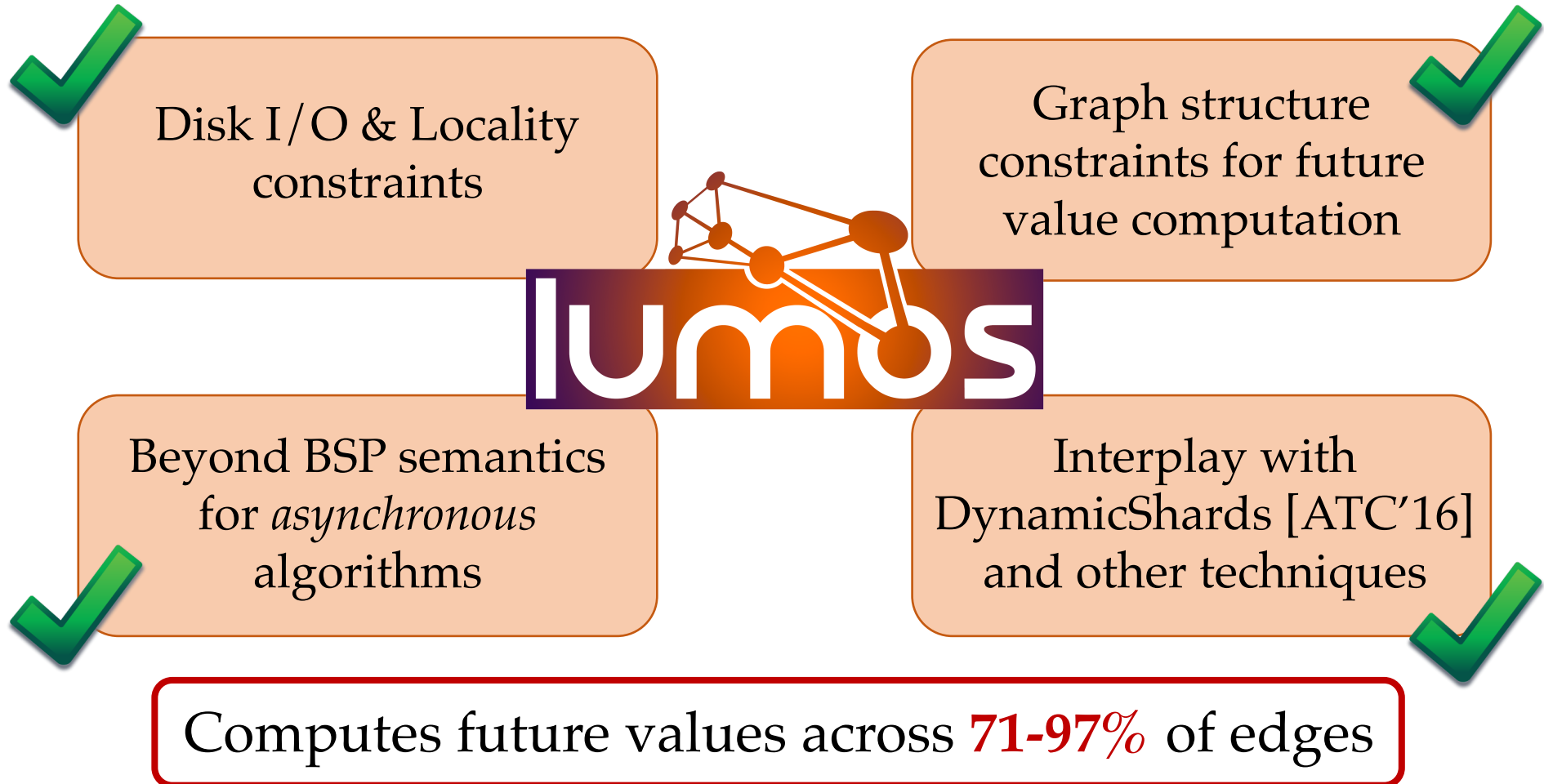
Disk I/O & Locality
constraints

Graph structure
constraints for future
value computation

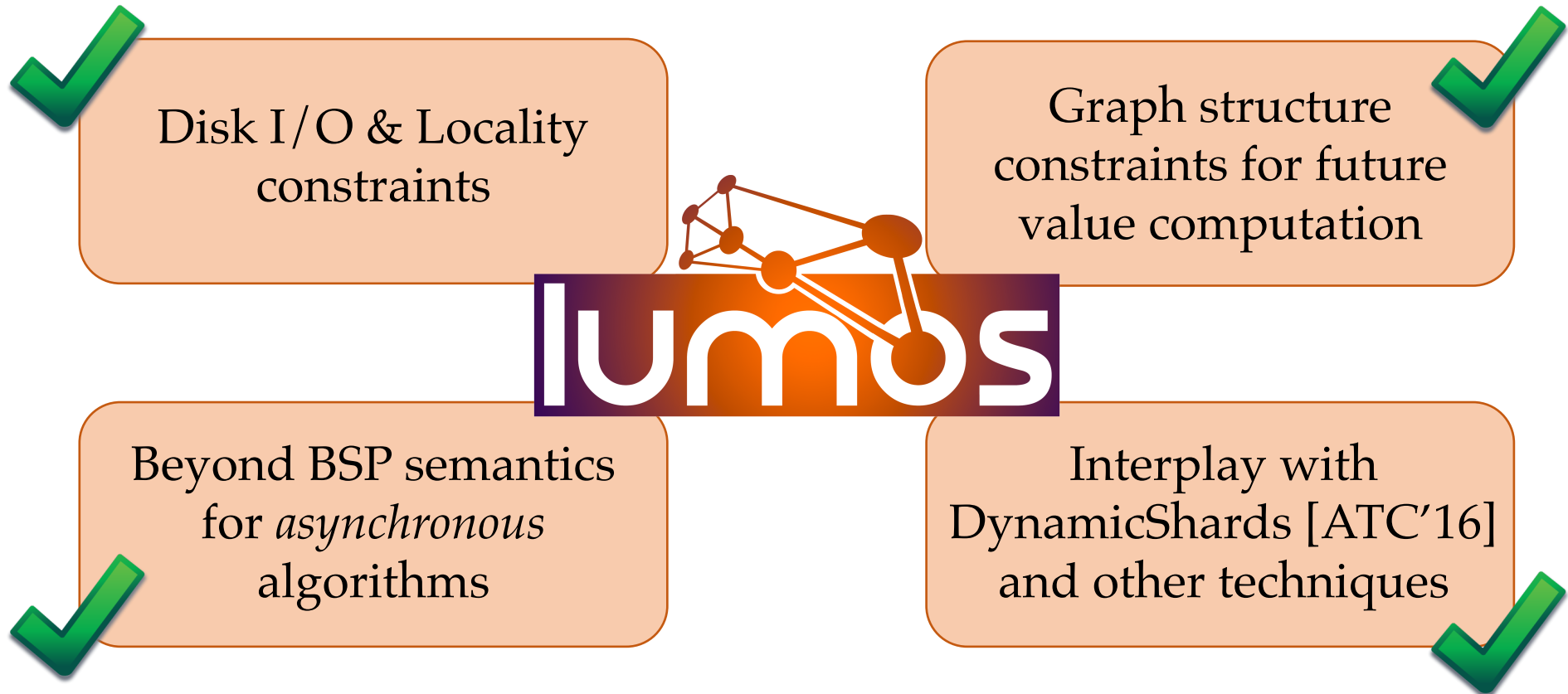
Beyond BSP semantics
for *asynchronous*
algorithms

Interplay with
DynamicShards [ATC'16]
and other techniques

Lumos: Challenges & Overview



Lumos: Challenges & Overview



Computes future values across **71-97%** of edges

Thursday, July 11 at 11:35 am in Graph Processing Frameworks session

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