

Automated Generation of Dynamically Load Balanced GPU Kernels for Graph Applications

Adam Harries,
Martin Pépin, Murray Cole,
Michel Steuwer, Christophe Dubach



Abstract or Optimised?

Implementing graph algorithms on GPUs requires a tradeoff between manual performance tuning of fixed kernels and high level flexible frameworks

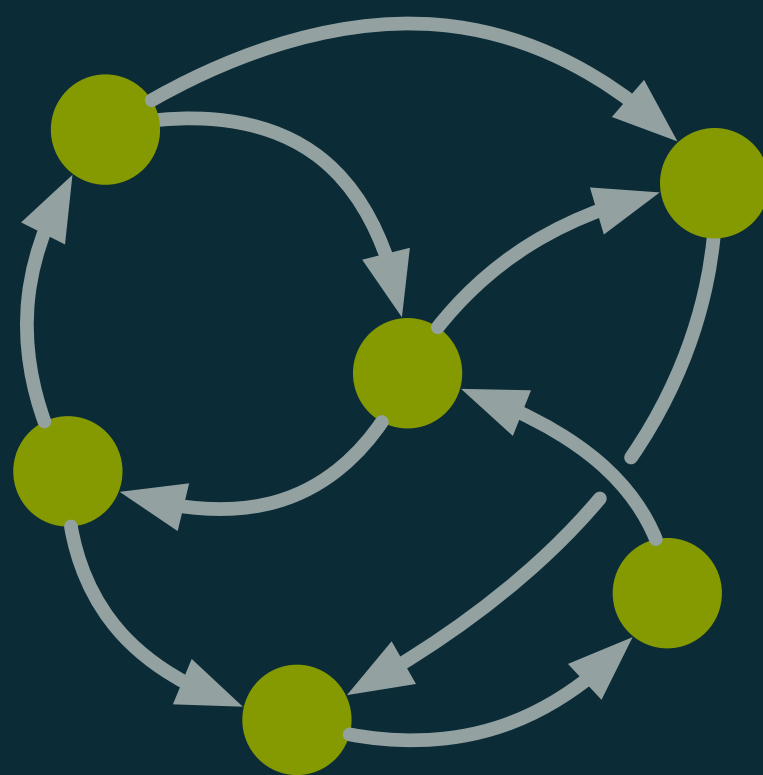


Selecting Algorithm Optimisations

Individual algorithms require different sets of optimisations to enable high performance.

	Correlation with Sparse Matrix-Dense Vector Multiplication
Breadth First Search	-0.36
Single Source Shortest Paths	0.69
Pagerank	0.88

Automatic Specialisation in Lift



Dynamic Load Balancing

Performance Results