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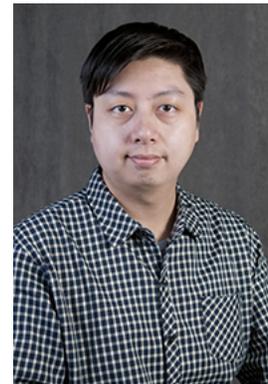
From Think Parallel to Think Sequential

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There is increasing demand for large-scale graph computations. In response to this need, several parallel graph systems have been developed. However, users often find it hard to write and debug parallel graph programs using these systems. Can we have a system that can parallelize existing sequential graph algorithms? Better yet, is there a general condition under which the parallelization guarantees to converge at correct answers?

This talk will focus on GRAPE, a parallel graph computation engine for graph computations that parallelizes sequential computation with three core functions. The foundation under GRAPE is a simultaneous fixpoint computation with guaranteed convergence to correct answers under a monotonic condition. GRAPE provides a user-friendly programming interface with support for graph-level optimization. Professor Wu also will discuss applications for GRAPE in combination with advanced graph-based models from a number of domains, including social recommendation, cyber event detection, and knowledge base management.

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