

In this talk, I will discuss Ligra, a shared-memory graph processing framework that has two very simple routines, one for mapping over edges and one for mapping over vertices. The routines can be applied to any subset of the vertices and automatically adapt to their density, which makes the framework useful for many graph traversal algorithms that operate on subsets of the vertices. Ligra is able to express a broad class of graph algorithms including breadth-first search, betweenness centrality, eccentricity estimation, connectivity, PageRank, single-source shortest paths, and local clustering algorithms. I will describe implementations of parallel algorithms in Ligra and present performance results. I will also discuss Ligra+, an extension of Ligra that uses graph compression to reduce space usage and improve parallel performance.