

Graph Labeling

Haim Kaplan, Tel Aviv University

Abstract

A labeling of a graph is a function mapping each node to a bit string. We look for labeling such that from the labels of two nodes u and v , we can compute some function of u and v . Many functions are of interest such as whether there is a directed path from u to v , or what is the length of the shortest path from u to v . We typically look for a labeling minimizing the sum of the lengths of the labels or the maximum length of a label.

Compact labeling schemes encoding various graph properties have been studied quite intensively in the past decade (and earlier too). Compact labelings are interesting theoretically, as a measure of how compactly some graph property can be encoded in such a distributed manner, and they also have some applications.

I will review some labeling schemes that I have been working on in the past decade and their applications.