Compact and Distributed Data Structures

Cyril Gavoille
University of Bordeaux
gavoille@labri.fr

Abstract

This talk will survey the role of data structures for compactly storing and representing information of various types in a localized and distributed fashion. Traditional approaches to data representation are based on global data structures, which require access to the entire structure even if the sought information concerns only a small and local set of entities. In contrast, we consider localized data representation schemes, based on breaking the information into small local pieces (or labels). These labels must be selected in a way that will allow us to infer information regarding a small set of entities directly from their labels, without using any additional (global) information. The talk will focus on combinatorial and algorithmic techniques and on various applications, including localized schemes for message routing in communication networks (compact routing), distributed procedures setting up virtual channels in circuit-switched networks, range-limited broadcasts, and proximity-sensitive representations of information in the Web (distance labeling and its applications).