*Invited lecture*

## SUCCINCT REPRESENTATIONS OF TREES

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Trees are fundamental data structures in Computer Science. The classical representation with a pointer per child is certainly easy too use but is extremely space consuming. For example, with this representation a binary tree with $n$ nodes takes roughly $n \log n$ bits. Since there are fewer than $2^{2n}$ such trees, a simple information-theoretic argument shows that a representation taking only $2n$ bits does exist.

The study of succinct representations of trees is the study of data structures that represent trees using space close to the information-theoretic minimum and at the same time support efficient navigation and query operations. This study, initiated exactly 20 years ago in a seminal work by Jacobson, has recently seen substantial progress.

In this talk we will review the main ideas and techniques used for succinct representations of trees and we will show their practical interest for the special case of storing XML documents and their underlying tree structures.