Abstract

Combinatorial problems from genomics

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Genomics seeks to unravel the role and regulation of genes in the genome for an organism, and to understand how these are conserved or evolved over time. Key combinatorial problems within genomics are the alignment of sequences, the construction of phylogenetic trees, and the interpretation of networks which represent metabolic pathways, regulatory networks, and interaction networks. Most of these problems are approximate rather than exact problems in that they must be able to treat partial matches, noisy data, and missing data in particular. This talk will introduce the problems.