



Department of Mathematics

Numerical Mathematics and Applied Analysis Group Seminar (NMAA)

Mining Carbohydrate Sugar Chains

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Abstract

Carbohydrate sugar chains, or glycans, are polysaccharides that take on tree structures, in comparison to the linear structures of DNA and proteins. Furthermore, these tree structures contain ordered nodes, in that each labeled node has ordered children. This ordering becomes important in recognition events for glycans to function. However, the noisiness of carbohydrate data make them difficult to analyze. In order to develop a model to mine these structures, we looked at the current probabilistic models for trees, but there was no model for labeled ordered trees. Thus, we developed the Probabilistic Sibling-dependent Tree Markov Model, or PSTMM, for mining labeled ordered trees. Furthermore, we developed a profile PSTMM model and an ordered tree Markov model to improve on PSTMM. All of these models and their experimental results to demonstrate their performance will be presented.

All are welcome
