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Extensions of graphical models with applications in genetics and genomics

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Proposition/Stellingen

Belonging to the thesis

Extensions of Graphical Models with Applications in Genetics and Genomics

Pariya Behrouzi

1. What is perhaps most distinctive about the graphical model approach is its ease in formulating probabilistic models of complex phenomena in applied fields, while maintaining control over the computational cost associated with these models. (Chapter 2)
2. The Gaussian copula graphical model is the most parsimonious probabilistic model that is able to capture dependencies in multivariate binary, ordinal and continuous data. (Chapters 2 - 5)
3. Sparse discrete graphical models for GWAS data outperforms multiple testing approaches of pairwise recombination fractions in terms of power for both diploid and polyploid species. (Chapter 3)
4. In modern science, statisticians should not only develop statistical methods but also designing statistical software for applying their methods in practice. (Chapter 4)
5. The Granger causality framework described by means of a vector autoregressive process as done in Chapter 5 should not be confused with strict causality. However, the true causal links tend to be a subset of the Granger causal links and therefore the latter are useful candidates for the substantive scientist. (Chapter 5)
6. “The best thing about being a statistician is that you get to play in everyone’s backyard” (*John Tukey*)