



Inferring Team Strengths Using a Discrete Markov Random Field

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(Submitted on 9 May 2013)

We propose an original model for inferring team strengths using a Markov Random Field, which can be used to generate historical estimates of the offensive and defensive strengths of a team over time. This model was designed to be applied to sports such as soccer or hockey, in which contest outcomes take value in a limited discrete space. We perform inference using a combination of Expectation Maximization and Loopy Belief Propagation. The challenges of working with a non-convex optimization problem and a high-dimensional parameter space are discussed. The performance of the model is demonstrated on professional soccer data from the English Premier League.

Subjects: **Machine Learning (stat.ML)**

Cite as: [arXiv:1305.1998](https://arxiv.org/abs/1305.1998) [stat.ML]

(or [arXiv:1305.1998v1](https://arxiv.org/abs/1305.1998v1) [stat.ML] for this version)

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