

Sports betting: A source for empirical Bayes

Research practice I: Project proposal presentation

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September 7, 2015



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Problem statement

Sports forecasting is a topic which have been widely studied in the literature (Stekler et al., 2010), where betting odds have played a remarkable role in this aim. Some methodologies have been based on a frequentist approach (Leitner et al., 2010), whereas others on a Bayesian framework (Baio and Blangiardo, 2010).

Problem statement

The idea is to use a Dirichlet categorized model, so we obtain the following posterior (Ramírez and Cardona, 2014) :

$$\pi(\mathbf{p}|Data) = \frac{\Gamma(\sum_{i=1}^k \alpha_i + c_i)}{\prod_{i=1}^k \Gamma(\alpha_i + c_i)} \prod_{i=1}^k p_i^{\alpha_i + c_i - 1}$$

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where k =number of possible outcomes, c_i =number of times the event i had happen, p_i =probability for the event i and α is the vector of hyper-parameters of the prior.

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Win Tommy Robledo	Win Andy Murray
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Consider the associated “probabilities” for each event and notice that:

$$\frac{1}{7} + \frac{1}{1.1} > 1$$

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General objective

To propose a methodology to forecast and design a betting strategy in sports competitions based on an empirical Bayes approach.

Specific objectives

- Review literature regarding to the topic of sports forecasting

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- Gather results and betting odds from US open 2014, premier league 13-14, FIFA world cup 2014 and NBA 14-15

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- Gather results and betting odds from US open 2014, premier league 13-14, FIFA world cup 2014 and NBA 14-15
- Check performance of a specific model at several sports
- Check a betting strategy in order to conclude if either is profitable or not



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Some previous related work

Sports forecasting have had a lot of attention, there are different ways for approaching this matter, firstly we mention the statistical models which uses sport-related inputs, then the expert tipsters (Štrumbelj, 2014), also there are the ones which are based on prediction markets (Spann and Skiera, 2009) and finally the models that are based on betting odds (Vlastakis et al., 2009).

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References I

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Questions

Any questions?