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THIS WEEK'S FORUM

Week 2

Discuss this week's module: Statistical Inference.

2 threads · Last post 40 minutes ago

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Prior elicitation

Herbie Lee Staff · 7 days ago

Suppose we are interested in global temperatures, and that we have a summary measure which represents the average global temperature for each year. Now we could ask "What is the probability that next year will have a higher average global

DESCRIPTION

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temperature than this year?" What would be your choice of prior and why? Be specific about the distribution and its parameters. You may use any other information that you want to bring into this problem.

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Konstantinos Ioannidis · 6 days ago

Normal with mean as the average global temperature this year and a very small standard deviation (since we don't expect big jumps in average temperature in one year)

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Herbie Lee Staff · 4 days ago

Here we are interested in the probability that the temperature is higher than last, not necessarily the value of the temperature itself. Do you still want to use a normal distribution?

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SD

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상언 박 · 5 days ago

Suppose a next year's average temperature y_(n+1) and saved data y1,...,yn. theta is a probability of the temperature growth over y_(n+1)-maxyi(1 to n). The prior distribution must be shown as Beta distribution. And we can make binomial likelihood (theta^x)*((1-theta)^(1-x)). I don't know how to make theta's distribution to be Beta.

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Antonio Carlos da Silva Senra Filho · 5 days ago

I could use a beta distribution for likelihood given that a sequence of the years that was hotter than the previous year, which could create a sequence of "success" and "failure" based on all the pairs of year collected by the data. The prior could be another beta distribution with alpha=1 and beta=1, assuming that the next year could be hotter or not with equal probability.

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MK

Michał Koziarski · 3 days ago

I would simply pick beta distribution with alpha = beta = 1, the reason being I don't have good justification for either choice and I'd rather base my opinion on data.

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Herbie Lee Staff · 3 days ago

Do you really think a temperature increase and decrease are equally likely? There is a lot of scientific evidence that we are in a period of global warming, and there is a lot of data to back that up. It is important to be intentional about your choice of prior.

If you truly have no information, Lesson 11 will cover the concept of non-informative priors. But in this case, a lot of data does exist, and it would be better to somehow incorporate that into your prior.

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