Homework #4
Ling495

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Even the most honest person doesn't tell the truth 100% of the time and the most fluent liars don't say false things all the time. An honest person could be mistaken, might believe a falsehood due to self-deception, or might decide to tell a white lie for social reasons. A dishonest person usually lies for self-serving reasons, but will tell the truth if it serves his purposes.

Suppose that 85% of the population is of the honest type. They generally tell the truth; let's estimate 90% of the time, what they say is true, the rest being mostly mistaken beliefs and white lies. The rest of the population—15%, in fact—are given to deception. Still, they only lie about 20% of the time.

Suppose that you meet someone who you catch in a lie (although you say nothing to him about it). Calculate the posterior probability that that person is of the dishonest type.

Suppose, next, that the very same person gives you a piece of information which, if true, could benefit you if you act on it. Given your calculation above, calculate the posterior probability that what the person said is true.

A while back, we looked at irony—the case where the person said the opposite of what they meant. My intuition tells me that irony is different than deception; for example, a person using irony is not lying and a person who is lying is not using irony. That is, the type of individual that uses irony is different than the type of a deceiver. This suggests that different kinds of information are used to detect irony.

Let's suppose that speakers can come in multiple types. For example, θ_{irony} might be the type that employs irony and θ_{honest} might be the type for an honest speaker. Suppose that these two types can distribute independently so that $\text{Prob}(\theta_{\text{irony}} \,\&\, \theta_{\text{honest}}) = \text{Prob}(\theta_{\text{irony}}) \times \text{Prob}(\theta_{\text{honest}})$.

Let's further assume that honest speakers are distributed as above and that 20% of the population is inclined to use irony and they only do it 10% of the time. Suppose you've detected a false statement. Work out the posterior probabilities for the four combinations of types: honest and ironic; honest and non-ironic; dishonest and ironic; dishonest and non-ironic.

We saw that conversational implicature seemed to presuppose that speakers are unfailingly truthful. We now have a more nuanced account honest signaling. Clearly, I shouldn't draw implicatures from dishonest signals. Propose a method for sorting speakers into honest and dishonest types that would allow receivers to compute implicatures.