Decision Theory and Evidence

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Homework 2

Due Tuesday 7th April

Question 1 As we discussed in class, there is a formal relationship between the mutual information between two random variables, and the problem of information transmission. Specifically consider a sender who observes the realization of the first random variable, and sends a coded signal which is then decoded to form the second random variable. The mutual information between two random variables is realated to how many bits are needed to be able to generate the second random variable from the first in such a manner. Between you, come up with a presentation which formally defines this relationship. Illustrate with the case in which there are only two states of the world (see Chapter 10 of Cover and Thomas, and in particular 10.3.1)