Subject: questions
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Date: 1/25/17, 6:47 PM
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I thought we had a very good class today. Here were some questions that came up:

(1) Demonstrate that a Gaussian over finite limits has a lower entropy than a uniform distribution (use MATLAB).

(2) Prove that a continuous GRV has maximum entropy.

(3) Consider two RVs that are uncorrelated:

$H(X,Y) = H(X) + H(Y) = H_i$

Does the H(X,Y) increase or decrease if the variables become more correlated?

(4) E[g(y|x)] = sum log(g(y|x)) p(y|x)
-or- = sum log(g(y|x)) p(x,y)

Which one makes sense?

(5) How do we prove I(X;Y) >= 0?

(6) What are the limits on I(X;Y)?

(7) Everyone says "Let's do MMIE." But what does MMIE mean - is it maximize or minimize mutual information?

We have 6 people in the class and 7 questions, so pick one of these to work on. Send your solution via email to the class listserv.

-Joe