

## Entropy & Information HW

1. Calculate the differential entropy of a uniform distribution of unit variance, & compare to that of a Gaussian.

2. Consider a source of 0's & 1's, that emits strings that always have blocks of 3 or 5 identical bits, for a change:

00000 111 000 111 000 111 1000 111 00000 11111 000  
etc.

What is the entropy per symbol?

3. What is the ~~ent~~ differential entropy per symbol of the AR process

$$Y_n = \sum_{k=1}^n Y_{n-k} a_k + X_n$$

where  $\langle X_{1/n}^2 \rangle = V$ ?