

Entropy of a Binary String

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Entropy is a measure of how much information we are ignorant about.

My model to calculate the *entropy of a string* is very straightfoward and has its foundations on the act of *flipping coins*.

I decided to use a *monotonic decresing power series* that converges inside some finite interval.

Starting with the *harmonic series*

$$\sum_{n:=1}^k \frac{1}{n}$$

and a bit $u_n \in \{0, 1\}$.

Resulting in a partial formula for entropy.

$$\sum_{n:=1}^k u_n \frac{1}{n}$$

The problem is that harmonic series is divergent.

So I modeled the flipping coins idea. And the result was a *power series* as follows:

$$E(n) = \binom{n}{i} \sum_{n:=1}^k u_n \frac{1}{2^n}$$

$i := \text{number of successful events}$