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Day 1.29.04 Date 9:55 am

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P for sequence. AB CD ... Z. $P_{AB\cdots Z}$?

$$P_{AB\cdots Z} = \frac{1}{26} \cdot \frac{1}{25} \cdot \frac{1}{24} \cdots 1$$

(specific seq.) $= P(A) \cdot P(B/A) \cdots P(Y/A\cdots X) \cdots P(Z/A\cdots Y)$

W for indistinguishable objects

(EX): W for "AAH" ?

If A_i are distinguishable. A_1A_2H A_2A_1H .... $W = 3! = 6$

Actually A_1 and A_2 are indistinguishable, need to correct overcounting. $N!_{corr}$ ≡ # of permutation of indistinguishable objects

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So, $W = \frac{N!}{N_{corr}!}$

For N objects belonging to "t" categories, containing "n_i" indistinguishable objects:

$$W = \frac{N!}{n_1!\, n_2! \cdots n_t!}$$

(ex): W for the word FREEZER, $N = 7$, $t = 4$.

$$W = \frac{7!}{1!\,2!\,3!\,1!}$$

(ex) $t = 2$, $W = \frac{N!}{M!\,(M-N)!}$

M: # of objects in 1st category.
$M-N$: # in 2nd category

(ex) Flip a coin 100 times. How many possible sequences have 20H?

$$W = \frac{100!}{20!\,(100-20)!}$$

Prob. distribution functions: (DF)

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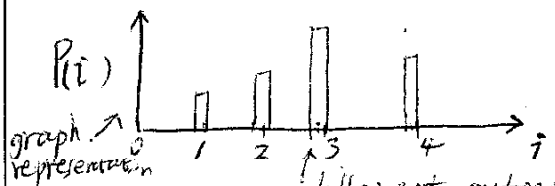


be CE, ME.

i = each outcome : 1, 2, 3, 4.

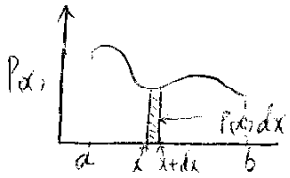
t = 4 diff. outcomes

$$\sum_{i=1}^{t} P(i) = 1$$ — math representation

$P(i)$ above : discrete DF

Continuous DF

Prob. : $P(x)\,dx$



Prob. density : $P(x)$

the prob. of an event per unit interval dx

$$\int_a^b P(x)\,dx = 1$$

normalization factors

normalize : $$P(x) = \frac{\psi(x)}{\int_a^b \psi(x)\,dx} = \frac{\psi(x)}{\psi_0}$$

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