BAYES LAW

$P(T|E) = P(T)\ P(E|T)\ /\ P(E)$

MINIMUM DESCRIPTION LENGTH PRINCIPLE

$I(T|E)=I(T)+I(E|T)$

compression heuristics

$I(T|E)=I(T)+I(E|T) \overset{!}{<} I(B\cup E)$

The Description Length of Theories I(*T*)

$I_{count}(T) = \quad = 1+\Sigma_{C\in T}(1+\Sigma_{\mathrm{Lit}\in C}\,\mathrm{size}(\mathrm{Lit}))$

where $\mathrm{size}(f(t_1,..,t_n)) \quad =2+\Sigma^{n}_{i=1}\,\mathrm{size}(t_i)$

and $\mathrm{size}(Var) \quad =1$

ENUMERATIVE ENCODING SCHEME

the number of T in a fixed enumeration of all theories over L as code. This leads to

$$\mathrm{I}_{\mathrm{en}T}(T)=\log_2(|L|)$$

as code legth of a specific theory T.

drawback: each $T \in L$ is assigned the same code length

$$I_{enL}(Lit) = \log_2(|P|) + \mathrm{a} \cdot \log_2(v + |C|)$$

CLAUSE C

$$I_{enL}(C) = \frac{\Sigma^{\mathrm{n}}_{\mathrm{i=1}} (1+I(L_i))}{(n - 1)!}$$

THEORY T

$$I_{enL}(T) = 1 + \log_2(v+1) + \sum_{C\in T} (2+I(C))$$

$$\log_2 |E| + \log_2 \left(\frac{|E|}{\left| E^{\oplus} \right|} \right)$$

$$\binom{a}{b} = \frac{a!}{b! \cdot (a-b)!}$$

PREFIX CODES

$$I_{prefix}(T) \_ \mathrm{N} \cdot \sum_{s \in sym(T)} -p_s \cdot \log_2 p_s$$