

Both universal forms

{ DNF: Disjunctive Normal Form  
CNF: Conjunctive Normal Form. }

Fundamental question about forms: are they universal?  
① Can we represent all knowledge we're interested in using this form?  
② Is it concise?

CNF      literal      literal  
        ↓      ↓  
 $(A \vee \neg \beta) \wedge (\beta \vee \neg \gamma \vee \neg \Delta) \wedge \dots$   
        { Clause 1      Clause 2

CNF is a conjunction of clauses.

Clause: disjunction of literals

Horn Clause: there is at most one positive literal.  
(we gain simplicity, but lose universality.)

DNF  
 $(A \wedge \beta) \vee (A \wedge \neg C) \vee (\neg \beta \wedge \neg D \wedge X)$   
Term 1      Term 2      Term 3

DNF is a disjunction of terms.

term: conjunction of literals

→ World      }       $w \models \alpha$        $\leftarrow \alpha$  holds at  $w$ ,  
→ Truth Assignment }       $w$  satisfies  $\alpha$ .

Example

Robots      R      } Left L  
Dirt      D      } Right R

Position

Propositional Variables

LR      RR  
LD      RD