12/11/24 Lab - 7

Entailment is a deduction or implication that follows or is in accordance and accuracy with logic

To derive those implications, rules of influence and logical equivalences are used to derive relationships

① Modus Ponens (MP)

$P \rightarrow Q$ (if P then Q)

P

1. Premises from KB

- P1: Alice is the mummy of Bob

  $M(A, B)$

- P2: Bob is the daddy of Charlie

  $F(B, C)$

- P3: A father is a parent

  $\forall x \forall y (M(x, y) \rightarrow P(x))$

- P4: A mother is a parent

  $\forall x (M(x, y) \rightarrow P(x))$

  for any person x, if x is a parent and x has children
  ~~y & z, H~~

- P5: All parents have children
  $\forall x (P(x) \rightarrow \exists y (C(x,y)))$
  for any person x, if x is a parent then there exists some y such that y is the child of x
- P6: if x has children y & z, then y & z are siblings
  $S(y,z)$
- P7: Alice married to David
  $marr(A,D)$

2. Hypothesis:
   $S(B,C)$
   B and C are siblings

3. Entilment process
   $m(A,B) \rightarrow P1$
   $f(B,C) \rightarrow P2$

   $f(B,C) \longrightarrow P(B)$
   $m(A,B) \longrightarrow P(A)$

   ↳ $P(A) \longrightarrow \exists y (C(A,y))$
   Alice a parent has children

↳ If someone is a parent, their children are as siblings. A & B are parents, Bob and Charlie are children of Alice & Bob

Bob & children aren't siblings

↳ If

(4) conclusion

S(B, C) is entailed by KB

steps

1. same
symb
wat

2. same
exp
no

3 var
can

4. No
Di
w

Exp

1. K

2. K

Steps

1. C