

12/11/24

Lab - 9

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

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

④ Modus Ponens (MP)
$$\begin{array}{l} P \rightarrow Q \quad (\text{if } P \text{ then } Q) \\ P \\ \hline Q \end{array}$$

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 and z , then

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
 $\text{mar}(A, D)$

2. Hypothesis:
 $S(B, c)$

B and c are siblings

3. Entailment Process

~~$m(A, B) \rightarrow P1$~~

~~$f(B, c) \rightarrow P2$~~

$f(B, c) \rightarrow P(B)$

$m(A, B) \rightarrow P(A)$

$\hookrightarrow P(A) \rightarrow \exists y (C(A, y))$

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

~~LXIb~~

④ Conclusion

$SC(B, c)$ is entailed by KB

pd