472 Recitation

Week 9

Logic

- Propositional logic: symbols, connectives $(\wedge, \vee, \Rightarrow, \Leftrightarrow, \neg)$
- First order logic: objects, variables,

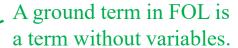 connectives $(\wedge, \vee, \Rightarrow, \Leftrightarrow, \neg)$,

  quantifiers$(\forall, \exists)$……

  ➢ $\forall$ with $\Rightarrow$

  ➢ $\exists$ with $\wedge$

FOL -> PL

- Universal Instantiation (UI)
  - UI should be applied for all possible ground term substitutions
  - Logically equivalent to the original KB
  - Can generate lots of irrelevant sentences

- Existential Instantiation (EI)
  - Substitute a single new constant symbol for an existentially quantified variable.
  - Inferential equivalent to the original KB

Lifted inference rules

- Redefined inference rules for FOL
- Unification: Finding substitutions that make different logical expressions look identical
- Unifier: The substitutions are called unifier

Unify $(\alpha, \beta) = \theta \; if \; \alpha\theta = \beta\theta$

α : Knows(John, x), β : Knows(John, Jane), θ: {x/Jane}