Week 4 Recitation

Robert Woodward

September 15, 2010

- (3 min max) Go over quiz from last week

- (3 min max) Go over homework from last week.

- Questions about lecture / homework so far?

- Politicians can fool some of the people all of the time, all of the people some of the time, but they cannot fool all of the people all of the time

    1. Declare predicates and their meaning:
        - $Fools(x, y, t)$: x fools y at time t
        - $P(x)$: x is a politician
    2. Universe of discourse: x, y all human beings, t all time instants
    3. $\forall[xP(x) \rightarrow [(\exists y \forall t Fools(x, y, t)) \land (\exists t \forall y Fools(x, y, t)) \land \neg(\forall y \forall t Fools(x, y, t))]]$

- Beware of errors:

    - $\forall y \exists t Fools(x, y, t)$: everyone is fooled at some point in time by x, but the time is not necessarily the same for all human beings.

    - $\exists t \forall y Fools(x, y, t)$: there is a least one time (or one incident) where everyone was fooled by x.

    - $\forall x[P(x) \rightarrow (\forall y \forall t \neg Fools(x, y, t))]$: Politicians do not ever fool anyone.

- Every student enrolled in CSE235 knows LaTeX but only some students use LaTeX in their homework.

    1. Declare predicates and their meaning:
        - $Enrolled(x, y)$: x is enrolled in class y.
        - $WritesHomework(x, y, z)$: x writes homework for y in z.
        - $Knows(x, y)$: x knows language y,
    2. Universe of discourse: all students, classes, languages

3. $(\forall x Enrolled(x, CSE235) \rightarrow (Knows(x, \LaTeX))) \wedge$
   $(\exists x Enrolled(x, CSE235) \wedge WritesHomework(x, CSE235, \LaTeX))$

- Every student enrolled in CSE235 knows LaTeX but only some students use LaTeX in their homework. However, every student in CSE310 uses LaTeX in his/her homework.

  1. Declare predicates and their meaning: Use the same as above

  2. Universe of discourse: Same as above

  3. $(\forall x Enrolled(CSE235) \rightarrow (Knows(x, \LaTeX))) \wedge$
     $(\exists x Enrolled(x, CSE235) \wedge WritesHomework(x, CSE235, \LaTeX)) \wedge$
     $(\forall x Enrolled(x, CSE310) \rightarrow (WritesHomework(x, CSE310, \LaTeX))$

- Every student enrolled in CSE235 knows some language because they took a course about it

  1. Declare predicates and their meaning:

     - $Enrolled(x, y)$: x is enrolled in class y
     - $Knows(x, y)$: x knows language y,
     - $TC(x, y)$: x took course about language y

  2. Universe of discourse: x all students, y all languages

  3. $\forall x \exists y Enrolled(x, CSE235) \rightarrow (Knows(x, y) \wedge TC(x, y))$

- (Last 10 minutes) Give quiz