

Natural Language Processing Homework 5

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README

1 Simplify (Q2, no need to turn in)

Mostly just notes for myself

check out d) $(\lambda a a)(\lambda b f(b))$

f), simplifying $(\lambda x \text{green}(x))(y) = \text{green}(y)$. Since the result holds for any y , what can you conclude about the relation between $\lambda x \text{green}(x)$ and green ?

Same? $\lambda x \text{green}(x)$ applied to anything y means that that something y is green. Similarly, green as a function can be applied to anything z that is green. In any case, they refer to the same set of things??

wait i don't get o)

2 (Q3) Simplify

2.1 John and Mary

Given $f(\text{John} = \text{loves}(\text{Mary}, \text{John}))$

- $(\lambda x \text{loves}(\text{Mary}, x))(\text{John})$
- $\text{loves}(\text{Mary}, \text{John})$ or alternatively, depending on semantics, "Mary loves John" or "John loves Mary". . . .

2.2 John loves Mary

Since $\text{loves}(\text{Mary}, \text{John})$ can equally mean "John loves Mary" OR "Mary loves John", we pick one interpretation to simplify the semantics. If we allow both meanings, then we end up with branching, which means twice as many ambiguous parses.

2.3

- $(\lambda j \forall x \text{woman}(x) \Rightarrow \text{loves}(x, j))$
- Assuming that we will continue with the given semantic that $\text{loves}(\text{Mary}, \text{John})$ means that John loves Mary.
f : for all x, if x is a woman, then j loves x.
f(John) : for all x, if x is a woman, then John loves x.
...

2.4

f = λy Obviously(y)

In order to construct "Sue obviously loves Mary", let $y = (\lambda x \text{loves}(\text{Mary}, x))$.
Then we get

2.5 part e

f = $\lambda m(\lambda j(\lambda e \text{act}(e, \text{loving}), \text{lovee}(e, m), \text{lover}(e, j)))$

2.6 part f

2.7 part g

3

I altered the parseattrs file to call *pythonparse* instead of *./parse* In order

4 english-fullquant.gra

4.1 attr

For *two*, we are ensuring that the two things that we are quantifying are not the same thing, with the *first* and *second* variables. Otherwise, we can end up counting a given something twice, which in reality then doesn't mean that we have two, but rather that we just counted one thing twice.

The singular *the* idek "the book"
exhaustive "the books"

4.2 ???

Used overleaf.com to generate LaTeX document.