Computational Logic

Interactive Theorem Proving | SS 2013 | 703641

Week 3 | March 23, 2015

Homework

1. Find a HOL-Light proof using the basic rules that shows: `|- a ==> b ==> a`
   - Propose and implement your own rules that perform more advanced tasks, such as conjunction elimination, conjunction introduction, implication introduction.
2. A more natural way of working with proofs, is to start with a goal and simplify it in order to prove it.
   - Propose a mechanism that works with the HOL inference rules, that allows working backwards
3. Prove $\exists x\,(P(x) \vee \neg Q(x)) \vdash \exists x\,\neg(Q(x) \wedge \neg P(x))$ in tree style natural deduction.
4. Prove the following properties of $\lambda \rightarrow$:
   - Strenghtening
   - Subject Reduction
   - ($\star$) Strong Normalization