Flow-Insensitive Points-To Analysis with Term and Set Constraints [3]

Pointer analysis in type theory's clothing!

Mihir Mehta

Department of Computer Science
University of Texas, Austin
mihir@cs.utexas.edu

20 October, 2014

Outline for section 1

Set constraints

- Useful for a whole lot of applications [1] ranging from register allocation to type inference.
- First formalised [4] in 1991, solved for good [2] in 1994.

Definition

Set constraints take the form $X \subseteq Y$, where X and Y are set expressions, generated by this grammar.

$E ::= \alpha | 0 | E_1 \cup E_2 | E_1 \cap E_2 | \neg E_1 | c(E_1, \ldots, E_{a(c)}) | c^{-i}(E_1)$

Test

Outline for section 2

Test

Test

References I


Alexander Aiken.
Introduction to set constraint-based program analysis.
Sci. Comput. Program., 35(2):79–111, 1999.


Witold Charatonik and Leszek Pacholski.
Set constraints with projections are in NEXPTIME.
In *35th Annual Symposium on Foundations of Computer Science, Santa Fe, New Mexico, USA, 20-22 November 1994*, pages 642–653. IEEE Computer Society, 1994.


Jeffrey S. Foster, Manuel Fahndrich, and Alexander Aiken.
Flow-insensitive points-to analysis with term and set constraints.
Technical report, U. OF CALIFORNIA, BERKELEY, 1997.

References II


Nevin Heintze and Joxan Jaffar.
A decision procedure for a class of set constraints.
In *In Fifth Annual IEEE Symposium on Logic in Computer Science*, pages 42–51. IEEE, 1991.