



Mês de: JANEIRO 2013

SEMINÁRIO DE LÓGICA MATEMÁTICA

Dia 31 de Janeiro (quinta-feira), às 17h, na Sala B3-01

Coinduction, corecursion, copatterns

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Abstract:

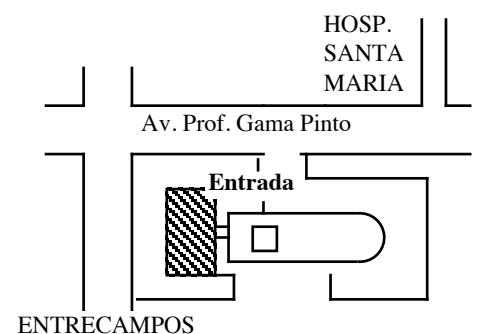
In computer science, most computations are in fact interactive programs, which correspond to computations which can potentially run forever. They can be represented as trees which have potentially infinite branches. Mathematically, these data types are coalgebraic data types.

Coalgebraic data types are often represented in functional programming as codata types. Implicit in formulations of codata types is that codata types fulfil bisimulation equality, which is undecidable. This resulted in lack of subject reduction in the theorem prover Coq and a formulation of coalgebraic types in Agda, which is severely restricted.

In this talk we demonstrate how, when using the fact that coalgebras are the dual of algebras we obtain a formulation of coalgebras which is completely symmetrical to that of algebras. Introduction rules for algebras are given by the constructors, whereas elimination rules correspond to recursive termination checked pattern matching. Elimination rules for coalgebras are given by destructors, whereas introduction rules are given by recursive termination checked copattern matching.

The resulting theory fulfils subject reduction is conjectured to be normalising.

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[joint work with Andreas Abel (Munich), Brigitte Pientka and David Thibodeau (Montreal)]

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