

## Nominal C-matching

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Sala: MAT B - térreo do MAT

### Abstract.

Nominal unification is first order unification with binders. We extended nominal unification adding commutative function symbols to the nominal syntax, which was denominated nominal C-unification. It was presented a sound and complete nominal C-unification algorithm that reduces a unification problem to a family of nominal fixed point equations. Also, a procedure for enumerating the possibly infinite set of solutions for this family of fixed point equations was given. Now, we are proposing an extension of nominal C-unification with a set of protected variables  $\mathcal{X}$  that are not instantiated. This problem was denominated nominal C-unification away from  $\mathcal{X}$ . From this extension we derived a sound and complete nominal C-matching algorithm that gives a finite set of solutions. In this approach, proofs of termination, soundness and completeness of the nominal C-unification and C-matching algorithms were formalised in Coq.

### References

- [1] M. Ayala-Rincón, W. Carvalho-Segundo, M. Fernández, and D. Nantes-Sobrinho. *Nominal C-Unification*. In *Pre-proc. of the 27th Int. Symp. Logic-based Program Synthesis and Transformation (LOPSTR)*, pages 1–15, 2017.
- [2] M. Ayala-Rincón, W. Carvalho-Segundo, M. Fernández, and D. Nantes-Sobrinho. *On Solving Nominal Fixpoint Equations*. In *Proc. of the 11th Int. Symp. on Frontiers of Combining Systems (FroCoS)*, volume 10483 of *LNCS*, pages 209–226. Springer, 2017.
- [3] C. F. Calvès and M. Fernández. Matching and Alpha-Equivalence Check for Nominal Terms. *J. of Computer and System Sciences*, 76(5):283–301, 2010.
- [4] C. Urban, A. M. Pitts, and M. J. Gabbay. *Nominal Unification*. *Theoretical Computer Science*, 323(1-3):473–497, 2004.