

# Proofs with Feasible Computational Content

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We consider logical propositions concerning data structures. If such a proposition involves (constructive) existential quantifiers in strictly positive positions, then – according to Brouwer, Heyting and Kolmogorov – it can be seen as a computational problem. A (constructive) proof of the proposition then provides a solution to this problem, and one can machine extract (via a realizability Interpretation) this solution in the form of a lambda calculus term, which can be seen as a functional program. We concentrate on the question how to control at the proof level the complexity of the extracted programs.

## References

1. A. S. Troelstra and H. Schwichtenberg. *Basic Proof Theory*. Cambridge University Press, 2nd edition, 2000. [Sections 1.2-3 and 2.1-3]