Bolander, Thomas; Hansen, Jens Ulrik; Hansen, Michael R., Decidability of a hybrid duration calculus. (English) Zbl 1278.03040


Summary: We present a logic which we call hybrid duration calculus (HDC). HDC is obtained by adding the following hybrid logical machinery to the restricted duration calculus (RDC): nominals, satisfaction operators, down-arrow binder, and the global modality. RDC is known to be decidable, and in this paper we show that decidability is retained when adding the hybrid logical machinery. Decidability of HDC is shown by reducing the satisfiability problem to satisfiability of monadic second-order theory of order. We illustrate the increased expressive power obtained in hybridizing RDC by showing that HDC, in contrast to RDC, can express all of the 13 possible relations between intervals.

For the entire collection see Zbl 1273.68016.

MSC:
03B44 Temporal logic
03B25 Decidability of theories and sets of sentences
03B70 Logic in computer science

Keywords:
duration calculus; hybrid logic; decision methods; monadic second-order theory of order

Software:
MONA; DCVALID

Full Text: DOI

References:
[12] Fränzle, M., Take it np-easy: bounded model construction for duration calculus, (), 245-264 · Zbl 1278.68170