

Abstract

COORDINATION IN HIERARCHICAL HYBRID CONTROL USING BEHAVIOURAL ABSTRACTIONS

P.A. Ugarov

e-mail: Pavel@rts.susu.ac.ru

Southern-Urals state university, Chelyabinsk, Russia

In this paper introduced behavioural discrete abstractions allowing effective coordination algorithms realization in the hierarchical hybrid control of complex objects. Abstractions (aggregated models) are created using real hybrid model of the control object and existing local controllers, therefore these abstractions contain information on the guaranteed values of the low-level quality indexes. Coordination algorithm is based upon system trajectory determination in the state space of the low-level quality indexes. It's greatly simplifies coordination problem, because we have no need to analyze full state space of the low-level elements. At the same time on the low level control based upon full hybrid models is applied, which provides necessary control quality. This hierarchical control framework is robust with respect to external disturbances and uncertainties as well as internal communication breakdown.

Keywords: hybrid systems, discrete abstractions, hierarchical systems, coordination.

Pages — 6, **pictures** —1.