

Asymptotic behavior matching for hybrid systems

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Abstract

We consider the problem of designing a controller C for a plant P that forces the behavior of the closed-loop system $C||P$ converge to the behavior of a given specification S . This problem is solved in a categorical context that allows us to chose P and S to be discrete, continuous, or hybrid. The framework uses functor co-algebras to model systems and equips them with filters and uniformities to discuss asymptotic convergence in a general setting.