Design of Stable Controllers for Takagi-Sugeno Systems with Concentric Characteristic Regions

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Abstract: The design of a fuzzy Takagi-Sugeno system with concentric regions and the use of discontinuous piecewise Lyapunov functions allows to relax stability conditions which can be expressed very easily as a set of Linear Matrix Inequalities. An adaptive algorithm allows to determine gradually the embedded sets and the corresponding local models.

Keywords: *Fuzzy control; linear matrix inequalities; Lyapunov functions; spherical coordinates.*

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