

Abstract

In this paper the design of unknown inputs proportional integral observers for Takagi-Sugeno (TS) fuzzy models subject to unmeasurable decision variables is proposed. These unknown inputs affect both state and output of the system. The synthesis of these observers is based on two hypotheses that the unknown inputs are under the polynomials form with their k th derivatives zero for the first one and bounded norm for the second one, hence two approaches. The Lyapunov theory and L_2 -gain technique are used to develop the stability conditions of such observers in LMIs (linear matrix inequality) formulation. A simulation example is given to validate and compare the proposed design conditions for these two approaches