
Distributed High-Gain/LMI Observer for Triangular Nonlinear System with Application to Vehicle

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Résumé

This paper proposes a distributed high-gain (HG) observer that combines a known communication network with a local high-gain observer for Lipschitz triangular nonlinear systems. By artificially decomposing the error system's nonlinearity, each nonlinear component can be confined to a smaller region compared to the standard HG observer. The HG parameter is reduced compared to a standard HG observer, leveraging the LMI-based observer technique to increase the practicality of distributed HG observer. Finally, the application to a vehicle platoon demonstrates the effectiveness of the distributed HG/LMI observer

Mots-Clés: Distributed observer, high gain observer, nonlinear system, vehicle application

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