Stability Analysis for Large Scale Time Delay Systems via the Matrix Lyapunov Function

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Abstract: In this paper, we analyze the stability of large-scale systems with multiple time delays in both isolated parts and interconnections via the scalar approach of the matrix Lyapunov function. This approach of the matrix Lyapunov function estimates the stability of a large-scale interconnected system based on a decomposition-aggregation method. The candidate Lyapunov function here takes advantage of a weighted sum of individual Lyapunov function for each free subsystem and every interconnection related to all in pairs isolated subsystems in case of nondelay.

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AMS Subject Classification: