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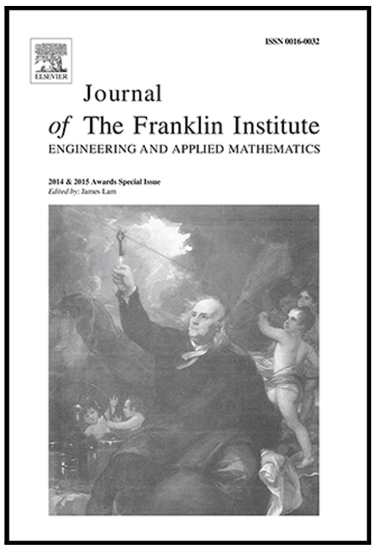

Modeling and stabilization of networked control systems with bounded packet dropouts and occasionally missing control inputs subject to multiple sampling periods

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Highlights

- The paper deals with the modeling and stabilization problem for NCSs with packet dropouts and occasionally missing control inputs. In particular, the focus of the paper is to capture the case where the packet dropouts and occasionally missing control inputs are subject to multiple sampling periods, and not periodic as in existing results.
- Input-delay approach is used to deal with the packet dropouts that are subject to multiple sampling periods. Whats more, by employing the probability theory such as the celebrated formula of total probability twice, double randomness of the input delay d(t) caused by multiple sampling periods and packet dropouts can be transformed into randomness of a parameter matrix of the transformed system, and then the corresponding results can be analyzed by making use of switched time-delay system approaches.
- A new stabilization problem is addressed for a class of sampled-data systems where both packet dropouts and occasionally missing control inputs are considered simultaneously. Some quantitative relations are established among some system variables.

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