

# Long-Range Prediction for Real-Time MPEG Video Traffic: An $H^\infty$ Filter Approach

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## Abstract

A novel prediction scheme is proposed for real-time MPEG video to predict the burst and long-range dependent traffic. The trend and periodic characteristics of MPEG video traffic are fully captured by a proposed stochastic state-space dynamic model. Then a recursive  $H^\infty$  filtering algorithm is proposed to estimate traffic for long-range prediction. Simulation results based on real MPEG traffic data show that the proposed scheme has superior performance and lower complexity than some adaptive neural network methods, such as TDNN, NARX, and Elman neural networks.

Keyword:  $H^\infty$  filter, long-range dependence, MPEG video, state-space method