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Modelling network traffic using time series analysis - a review

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ABSTRACT:

With the advent of Internet of Things (IoT) technology, the need for tools which facilitate the development and management of network based services has become increasingly important. Issues such as network security and quality of service are no longer just the concern of ISPs and big corporations, but have now become the intimate concern of private users with implications that directly affect the personal lives and businesses of citizens. At the heart of addressing these concerns lies the problem of modelling the networks on which interconnected devices now operate. While the activity of provisioning the networks and responding to threats may still lie in the hands of networking specialists, the ability to at least know when something is amiss remains instrumental to establishing the confidence and peace of mind of IoT users. In this paper we broadly review the historical development of network traffic modelling and trace a path that leads to the use of time series analysis for the said task. A basic introduction to time series analysis is provided in order to facilitate the theoretical discussion regarding the feasibility and suitability of time series analysis techniques for modelling network traffic. The intention is to provide an orientation, for the interested novice, to the domain of time series analysis for network traffic modelling; and to advocate the necessity and utility of further study in these domains for application to IoT concerns.