Complex Event Processing to Detect Congestions in Mobile Network

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Abstract— **With a wide spread of smartphones and tablets, a mobile network becomes frequently congested when many users concentrate to the same place. Especially when a large-scale event is held, a heavy network congestion interferes with the communication of the participants as well as local residents. In order to detect the network congestion, a large amount of traffic log should be analyzed in real time. In this paper, the proposed system attempts to detect a sign of the congestion by using a CEP (Complex Event Processing). First, by analyzing network status when the large-scale event, Nagaoka Fireworks festival, is held, it is observed that the network congestion can be effectively detected from the combination of (1) the RTT, (2) the specific type of TCP session termination (FIN-No-ACK) and (3) the number of retransmission packets. Next, we develop our proposed congestion detection system by using a CEP for detecting these metric in real-time. Through the experimental evaluation, it is concluded that the proposed system can scalably analyze a large amount of traffic log in real-time.**

Keyword— **Network Congestion, Mobile Network, Congestion Detection, Stream Data Processing, Complex Event Processing**

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