McGill
Centre for
Intelligent Machines

Systems and Control Seminar
Friday February 2
11:00-12:00
Room MC437 McConnell Engineering Building

Heavy tails and long-range dependence in network traffic: myths and reality

Speaker: Professor Ravi Majumdar

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Abstract:

Recently there has been a great amount of interest in long-range dependent and heavy-tailed traffic characteristics. Such traffic is often referred to as "self-similar" traffic. This is because of the potentially damaging effects that such traffic can have on network performance in terms of delay and packet loss.

In this talk I will present some recent results on the loss and delay asymptotics for such traffic models in two contexts. The first is the large network context when there are many heavy-tailed sources and the available bandwidth is much larger than the peak bandwidth requirements of a single source. In this context, the heavy-tailed characteristics can be shown to have minimal impact and hence are not important when allocating resources.

The second context is the case of heterogeneous session traffic for which the precise asymptotics of delay and loss are also obtained. In this case we show that asymptotics based on source aggregation give incorrect predictions and moreover insights obtained from the homogeneous case which has been the focus in the literature are inadequate for buffer and capacity allocation. The talk will conclude with extensions to more complex (than FIFO) disciplines.

All are invited.
For inquiries, please contact Prof. Benoit Boulet at boulet@cim.mcgill.ca