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Séminaire du CIRRELT Seminar

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A Synthetic Time Series Technique for Predicting Network-wide Road Traffic

Abstract: Intelligent Transportation Systems (ITS) is a collective name for various services that provide real-time information to travelers and maintainers of transportation systems, thus making them intelligent. ITS systems are powered by large quantities of data, and are key component of any "Smart City". Knowing the conditions of a network, the system can alert both travelers and the management about deteriorating conditions, like congestion, and update the route guidance and navigation systems to improve system performance. The major hurdle to the effectiveness of ITS systems is the lack of foresight into the conditions. Current systems are reactive, and do not respond to conditions unless they worsen beyond some thresholds. However, by the time the conditions worsen, it is already too late for mitigation efforts, and the benefits are quite narrow. With foresight, the system can be made to perform better, and significantly increase the benefits of ITS. Therefore, traffic predictions is a deeply researched area, with huge funding and numerous publications. Almost all methods in the large literature are real-time models, and are computationally very expensive, especially with the size of the network. This talk presents a novel method, borrowed from Small Area Estimation, that exploits the inherent patterns in traffic to deliver a fast, scalable and flexible framework for forecasting any aspect of traffic. The method is demonstrated using the Autoregressive Integrated Moving Average (ARIMA) family of models on a mixed network with a combined length of 3,200 km (2,000 miles).

JEUDI / THURSDAY

16 novembre 2017 / November 16th, 2017
10h30

Salle / Room 5441
Pavillon André-Aisenstadt
Université de Montréal

Ouvert à tous / Open to all

Organisateur / Organizer
Fabian Bastin

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