Hamilton Institute

Exploratory analysis of human mobility and activities from geo-referenced communication data streams

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Abstract:
Communication technologies with their very high penetration into society can serve as particularly rich source of information to explore and model evolution of complex social systems.

This talk presents a framework of methods useful for exploratory analysis, modelling and visualization of data streams available from Twitter, instant messenger services and mobile phone communication logs. We apply probabilistic topic models to uncover the temporal evolution and spatial variability of population's response to various stimuli such as large scale sportive, political or cultural events. We demonstrate how untypical activity levels can be identified by fitting a non-homogeneous Markov-modulated Poisson processes and exploring spatial variability of the component corresponding to unusual bursts/lulls of human activities.

Finally, we present initial ideas on the combined use of available data sources and models within a joint large-scale geocomputation framework to uncover a complex interplay of mobility and communication patterns.

Venue: Seminar Room, Hamilton Institute, Rye Hall, NUI Maynooth

Time: 3.00pm - 4.00pm

Travel directions are available at www.hamilton.ie

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