Colloquium d'Informatique de l'UPMC Sorbonne Universités

Cybersecurity and network measurement problematic in so many ways

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Amphi 25

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In this talk, I will discuss the challenges placed on us when the goal is to find anomalies in the Internet. The challenges are statistical, methodological and ethical.

Firstly, today's Internet is vastly more complex (not just larger) than its original designers expected. The number of applications numbers in the millions. Systems increasingly involve machine-to-machine communication as well as human-to-human, or simple information retrieval. Thus the dimensionality of the system is massive, and the definition of an "anomaly" is itself non-trivial. Secondly, the scale requires us to limit measurement to sampling, and yet as we've just observed, we have dynamic, high dimensionality data. What to sample, where and when, is increasingly non-obvious. This leads to the third strand of the talk, which is that the most successful measurement methods we have found in the last decade also represent a fairly extensive invasion of privacy, and are subject both to ethical and to legal constraints.

Jon Crowcroft has been the Marconi Professor of Communications Systems in the Computer Laboratory at the University of Cambridge since October 2001. He has worked in the area of Internet support for multimedia communications for over 30 years. He graduated in Physics from Trinity College, University of Cambridge in 1979, gained an MSc in Computing in 1981 and PhD in 1993, both from UCL. He is a Fellow the Royal Society, a Fellow of the ACM, a Fellow of the British Computer Society, a Fellow of the IET and the Royal Academy of Engineering and a Fellow of the IEEE.

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