

*The Hong Kong Polytechnic University
Department of Logistics and Maritime Studies
Research Seminar*

The Internet of Things and Information Fusion: Who Talks to Who?

by

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(joint work with Soroush Saghafian and Stephan Biller)

**Date: 26 January 2018 (Friday)
Time: 10:30am - 11:30am
Venue: M802, Li Ka Shing Tower
The Hong Kong Polytechnic University**

(Conducted in English)

Abstract:

The promised benefits of the Internet of Things (IoT) are predicated on the notion that better decisions will be enabled through a multitude of autonomous sensors (often deployed by different companies) providing real-time knowledge of the state of things. This knowledge will be imperfect, however, due to sensor quality limitations. A sensor can improve its estimation quality by soliciting a state estimate from other sensors operating in its general environment. Target selection (which sensors to talk with to solicit their estimates) is challenging because sensors may not know the underlying inference models or qualities of sensors deployed by other companies. This lack of trust (or familiarity) in others' inference models creates noise in the received estimate, but trust builds and noise reduces the more frequently a sensor targets any given sensor. We characterize the initial and long-run information sharing network for an arbitrary collection of sensors operating in an autoregressive environment. The state of the environment plays a key role in mediating quality and trust in target selection. When qualities are known and asymmetric, each sensor eventually settles on a constant target set in all future periods but this long-run target set is sample-path dependent and varies by sensor. When qualities are ambiguous, ongoing randomization across different subsets of sensors may be optimal.

Bio:

Brian Tomlin is a Professor of Business Administration at the Tuck School of Business at Dartmouth. He is a Department Editor for the Manufacturing & Service Operations Management journal. He is also past President of the Manufacturing & Service Operations Management society. Brian's research lies in the broad domain of operations and supply chain management, with a particular interest in the areas of supply chain risk and operations innovation. With co-authors, he received the 2012 Wickham Skinner Award for Best Paper published in Production & Operations Management, was a finalist for the 2013 Manufacturing & Service Operations Management Best Paper Award, and was a finalist for the 2012 INFORMS Daniel H. Wagner Prize for Excellence in Operations Research Practice. Brian received his PhD from MIT's Sloan School of Management, where he was awarded the Zannetos PhD Dissertation Prize. His undergraduate degree is from University College Dublin in Ireland. Prior to his academic career, he worked at General Electric and the Boston Consulting Group.

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All are welcome!