UW Center for Pattern Analysis and Machine Intelligence

Graduate Seminar Series

High-level Information Fusion for Constrained SMC Methods and Applications

Speaker: Sepideh Seifzadeh

Date: September 29, 2014

Time: 4:00pm – 4:30 pm

Place: E5-5106 Refreshments will be served

Abstract :

Information Fusion is a field that studies processes utilizing data from various input sources, and techniques exploiting this data to produce estimates and knowledge about objects and situations. On the other hand, human computation is a new and evolving research area that uses human intelligence to solve computational problems that are beyond the scope of existing artificial intelligence algorithms. In previous systems, humans' role was mostly restricted for analysing a finished fusion product; however, in the current systems the role of humans is an integral element in a distributed framework, where many tasks can be accomplished by either humans or machines. Moreover, some information can be provided only by humans, because the observational capabilities and opportunities for traditional electronic (hard) sensors are limited.

A source-reliability-adaptive distributed non-linear estimation method applicable to a number of distributed state estimation problems is proposed. The proposed method requires only local data exchange among neighbouring sensor nodes. It therefore provides enhanced reliability, scalability, and ease of deployment. In particular, by taking into account the estimation reliability of each sensor node at any point in time, it yields a more robust distributed estimation. The filtering is a soft-data-constrained variant of multi-model particle filter, and is capable of processing both soft human-generated data and conventional hard sensory data.

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