UW CENTER FOR
PATTERN ANALYSIS AND MACHINE INTELLIGENCE

GRADUATE SEMINAR SERIES

Distributed Random Set Theoretic Soft/Hard Data Fusion

Speaker: Bahador Khaleghi

Date: July 11, 2012

Time: 4:30 pm – 5:00 pm

Place: E5 (5128) Refreshments will be served

Abstract :

This research work argues in favor of a random set theoretic approach as the first step towards realizing a soft/hard data fusion framework. Several challenging problems related to soft/hard fusion systems are addressed in the proposed framework. First, an extension of the well-known Kalman filter within random set theory, called Kalman evidential filter (KEF), is adopted as a common data processing framework for both soft and hard data. Second, a novel ontology (syntax+semantics) is developed to allow for modeling soft (human-generated) data assuming target tracking as the application. Third, as soft/hard data fusion is mostly aimed at large networks of information processing, a new approach is proposed to enable distributed estimation of soft, as well as hard data, addressing the scalability requirement of such fusion systems. Fourth, a method for modeling trust in the human agents is developed, which enables the fusion system to protect itself from erroneous/misleading soft data through discounting such data on-the-fly.

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