Recent developments in multi-object filtering for multi-target tracking

In the last decade, the field of sensor fusion has witnessed a paradigm shift in the way that methods for tracking multiple targets in defence-related surveillance applications are developed. Heuristic approaches for estimating multiple dynamical objects have been developed since the 1970s, yet these methods suffer from systematic failure due to the heuristics introduced for track management. A radically different approach based on Random Finite Sets considers the problem in a unified way was enables operators to estimate the correct number of targets in challenging environments where there may be many false alarms and the targets are not always observed. This led to principled low computational cost approximate solutions that could be deployed on real-time systems known as multi-object filters. This talk will present recent developments in this field with applications on a range of different sensing platforms.