



Army Relevance: 1. Will significantly improve the ability to recognize spatial-temporal activities in heterogeneous volume of data; 2. Direct applications to information assurance, MASINT vulnerability assessment, video surveillance, and defense against terrorism; 3. Enable the “optimal” integration of massive amounts of information from multiple intelligence sources and improve automatic correlation and fusion

Objectives: 1. Develop a general and systematic foundation and algorithms for spatial-temporal statistical inference for fusion of heterogeneous information from multi-source & distributed sensor networks to fight against terrorism and for information assurance 2. Solve central problems common in persistence surveillance

DoD COLLABORATION

AFRL ATR Center, ARL/SEDD, CERDEC

Approaches: Spatial-temporal nonlinear filtering and dynamic Bayesian networks

Accomplishments: 1. Proposed a formulation of spatio-temporal data association for tracking multiple extended targets; 2.. Developed a Data Driven Markov Chain Monte Carlo (DD-MCMC) approach; 3. Applied the algorithm to moving object detection and tracking from a moving platform; 4. Online learning the appearance model for object tracking with appearance changes