

Signal and Data Processing of Small Targets 2010 (DS123)

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CONFERENCE MOVING TO ORLANDO FOR 2010

This conference will provide a forum for discussion of advances in algorithms for sensor signal and data processing, including track initiation, maintenance, termination, sensor fusion, and signal detection. Of interest are targets that are too small for effective use of traditional automatic target recognition with a single frame of data. These targets include point-source targets, unresolved closely spaced objects, small extended objects, and clusters of small targets.

Of particular interest is the processing of low observables or tracking in a dense environment of false signals, clutter, or targets. There is an increasing need for improvement in algorithm efficiency, i.e., improved performance relative to processor resources required. Also needed are accurate evaluations and predictions of required resources and of performance under realistic conditions.

Papers are invited on algorithm concepts and details, results of feasibility studies and detailed performance evaluations, analytical studies, simulation and performance evaluation techniques, related mathematical and statistical methods, and methods combining signal level processing and tracking. Of special interest are papers that provide information for selecting algorithms for an application. This includes the characteristics of algorithms in terms of performance and required resources as a function of operating conditions.

Papers about both tactical and strategic applications are solicited. Video and PC demonstrations of performance are solicited. Papers are solicited in the following and related areas:

Signal Processing

- * signal detection
- * linear or nonlinear estimation and filtering
- * low signal-to-ratio clutter ratio processing
- * multiple frame signal processing/track-before-detect
- * closely spaced object resolution/characterization
- * extended object and cluster processing
- * background removal/clutter rejection/image preprocessing
- * detecting targets that obscure the background
- * jitter, drift, bias estimation
- * gamma circumvention
- * threshold adjustment and control/CFAR processing
- * image/frame registration
- * fuse-before-detect.

Tracking: Association and Filtering

- * single and multiple target tracking
- * tracking low observables/dim targets
- * single and multiple sensor data tracking
- * tracking filters or data association
- * reversible decision and multiple hypotheses tracking
- * target detection and acquisition
- * methods to accommodate false signals, clutter, and stars
- * track initiation, maintenance, and termination
- * efficient gate search approaches
- * maneuvering target/multiple model tracking
- * sensor data fusion/network-centric processing
- * tracking with dissimilar or non-collocated multiple sensors
- * sensor registration bias/gridlock processing
- * tracking with unresolved closely spaced objects
- * point source, small extended object, and cluster tracking
- * improved track consistency and quality assessment.

Signal and Data Processing Issues

- * multiple platform processing distribution
- * algorithms for concurrent/parallel processing
- * critical open issues and algorithm tradeoffs
- * impact of sensor design or scanning pattern on processing
- * phenomenology considerations
- * performance: evaluation methods, statistics, prediction
- * modeling, simulations, and algorithm testbeds
- * efficient/robust/adaptive processing methods
- * promising advanced or innovative techniques
- * target typing, classification, or discrimination
- * counter-countermeasures
- * processing multispectral data
- * use of track data in signal processing
- * integrated signal and data processing
- * hyperspectral processing
- * target-weapon assignment methods
- * processing target features and attributes
- * combat identification
- * algorithms for homeland security
- * network-centric resource management
- * chemical/biological defense processing
- * processing of fusion-level functions.

Abstract Due Date: 21 September 2009

Manuscript Due Date: 8 March 2010

Note: All accepted abstracts, at the chair's discretion, may be bound, available at the meeting or available on the website. Late abstract submissions will be considered, subject to program availability and chair's approval.

The latest information on this conference is on the World Wide Web at:
<http://home.att.net/~drummond/>

Submission of Abstracts for SPIE Defense, Sensing, and Security

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1. By submitting an abstract, I agree to the following conditions:

- An author or coauthor (including keynote, invited, and solicited speakers) will register at the reduced author registration rate, attend the meeting, and make the presentation as scheduled. (Current SPIE Members receive an additional discount on the registration fee.)
- Authors and coauthors attending the meeting must obtain funding for their registration fees, travel, and accommodations, independent of SPIE, through their sponsoring organizations before submitting abstracts.
- All clearances, including government and company clearance, have been obtained to present and publish. If you are a DoD contractor, allow at least 60 days for clearance.
- SPIE is authorized to circulate your abstract to conference committee members for review and selection purposes.
- Accepted abstracts may be published with the printed Final Programs or on a CD-ROM for distribution at the meeting. Please submit only 250-word abstracts that are suitable for publication.
- Please also submit a 100-word abstract suitable for early release. If accepted, this abstract text will be published prior to the meeting in online or printed programs promoting the conference.
- A full-length manuscript (8-12 pages) for any accepted oral or poster presentation (including keynote, invited, and solicited presentations) will be submitted for publication in the SPIE Digital Library, printed conference Proceedings, and CD-ROM.

2. Prepare to submit:

- Have all contact information (full names, affiliations, addresses, phone numbers, and emails) for your coauthors ready.
- Only original material should be submitted.
- Abstracts should contain enough detail to clearly convey the approach and the results of the research.
- Commercial papers, papers with no new research/development content, and papers where supporting data or a technical description cannot be given for proprietary reasons should not be submitted, and will not be accepted for presentation in this conference.

3. Second Paper

Authors who submit two papers are encouraged to submit the second paper as an "oral standby/poster presentation" paper. A standby paper is presented orally if an author of another paper scheduled for oral presentation is obliged to cancel. A poster is displayed whether or not the standby oral presentation is given and the paper is published in the proceedings

4. Submit your abstract online:

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- To ensure a high-quality conference, all abstracts will be reviewed by the Conference Chair/Editors for technical merit and suitability of content. Conference Chair/Editors reserve the right to reject for presentation or publication any paper that does not meet content or presentation expectations.
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- Applicants will be notified of abstract acceptance and sent manuscript instructions by email no later than week of 9 November.
- Final placement in an oral or poster session is subject to the Chairs' discretion. Instructions for oral and poster presentations will be sent to the person marked as Contact Author by email.

Proceedings of SPIE and SPIE Digital Library

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