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CALL FOR PAPERS
Special Issue of the
International Journal of Prognostics and Health Management

Uncertainty in Prognostics and Health Management

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The International Journal of Prognostics and Health Management (IJPHM) is the premier *online open access journal* related to multidisciplinary research on Prognostics, Diagnostics, and System Health Management. This special issue focuses on computational methods and practical applications dealing with the representation, interpretation, quantification, and management of uncertainty in prognostics and health management.

Prognostics, the science of prediction, is inherently affected by several sources of uncertainty (natural variability, data uncertainty, and model uncertainty). It is important to rigorously account for these sources of uncertainty while predicting the behavior of engineering systems, and compute the overall uncertainty in the remaining useful life prediction. Uncertainties that exhibit complex, non-linear interactions need to be aggregated using computational methods. If there is a large uncertainty associated with the remaining useful life prediction, then such information may not be useful for meaningful decision-making. Therefore, recent research efforts have focused on developing methods to characterize, interpret, incorporate, and quantify uncertainty in prognostics, quantify the risk associated with system operation decisions, and eventually facilitate risk-informed decision-making activities such as fault mitigation, mission re-planning, etc.

Topics of Interest:

- Uncertainty representation, quantification, and management
- Data-driven and model-based approaches for PHM
- Probabilistic and non-probabilistic approaches for PHM
- Condition-based monitoring and maintenance
- Uncertainty in structural health monitoring
- Uncertainty in diagnostics and prognostics
- System identification and spatial-temporal estimation
- Stochastic prediction of loading and operating conditions
- Strategies for sensor placement and design
- Signal processing and filtering techniques for PHM
- Measures and metrics for prognostic performance assessment
- Verification and validation under uncertainty
- Risk-informed decision-making under uncertainty
- Quantification of risk and risk measures

This Call For Papers solicits research articles that discuss the start-of-the-art techniques in the topic of uncertainty quantification and management in the field of prognostics and health management. The goals of this special issue are to create an open forum for discussing new methods and approaches for uncertainty quantification in PHM, and enhance the overall understanding regarding the treatment of uncertainty in prognostics, with an emphasis on practical engineering applications from various disciplines such as aerospace engineering, mechanical engineering, structural engineering, civil engineering, electrical engineering, nuclear engineering, etc.

Submission Types:

Full-Length Regular Papers: Regular papers should describe new and carefully confirmed findings. Experimental procedures and results should be given in detail sufficient for others to replicate the work.

Technical Briefs: Technical briefs describe a single result, experiment, or technique of general interest in short manuscripts enough to describe experimental procedures and clearly, and interpret the results in the context of other research.

Communications: Communications are short manuscripts that include (but are not limited to) rebuttals and/or counterexamples of previously published papers and are suitable for recording the results of complete small investigations or giving details of new models or hypotheses, innovative methods, techniques or apparatus.

Survey Papers: Survey papers are of a tutorial or review nature covering emerging research topics in PHM or describe the best current practice, detailed characteristics and performance. These papers cover areas of general interest.

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Submission Instructions: Please submit your manuscripts directly by going to the society webpage and follow instructions for journal submissions. There you will find an option to select the special issue.

Intent of submission/abstracts due: August 31, 2014
(Authors are requested to convey intent through email by sending the title and abstract)

Deadline for Submission: November 30 2014