

## CALL FOR PAPERS

*Special Issue of the*

# International Journal of Prognostics and Health Management Advanced Diagnostics and Prognostics for Automotive Systems

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**The International Journal of Prognostics and Health Management (IJPHM)** is the premier online and open access journal related to multidisciplinary research on Prognostics, Diagnostics, and System Health Management. There are **no fees whatsoever to publish in IJPHM**.

This special issue focuses on theory and application of diagnostics and prognostics (DnP) analytics and methods for condition monitoring, anomaly detection, and health management of automotive systems. With elevated system complexity in electrified powertrains, connected vehicles, and automated driving; new DnP analytics and technologies will support accurate and reliable estimation and predictions of state of health for these complex vehicular systems. The increased capability of the vehicle to exchange data with passengers, surrounding infrastructure, and other vehicles has been both an enabler and provide motivation for developing advanced vehicle health management (VHM) features. Robust VHM systems can mitigate degradation of vehicle components by shifting operating points and even enable reconfigured operation until repairs can be made. At the same time, the development cycle for these new and more complex systems needs to be shortened in order to reduce development cost.

Recent advances in systems and analytics tools such as machine learning and cloud-based computation can leverage the classic model based DnP algorithms to address the complexities, and performance requirements of future VHM systems. Extensive researches have been done to analyze and predict performance of machine learning algorithms that is required for reliable modeling, estimation, and detection algorithms. Re-configurable and stochastic reinforcement learning techniques have also been successfully utilized in recent research to mitigate degradation in autonomous systems. Still, much work is needed to ensure robust performance of the vehicle with any newly developed component and algorithm. This call for papers encourages researchers to share their novel and recent results in addressing advanced diagnostics and prognostics in automotive system. Articles addressing recent developments on the following topics are solicited, but not limited to:

- DnP algorithms and methods for vehicle components such as propulsion, chassis, and electrical systems
- DnP systems and methods for automated driving systems and connected vehicles
- Fault mitigation for robust performance of vehicular systems
- DnP systems for advanced automotive manufacturing processes
- Emerging machine learning and verification techniques and their application in VHM
- Physics of failure mechanisms and modeling and simulation techniques

**Submission Types (papers can range from 4-8 pages in length):**

**Technical Briefs:** Technical briefs describe an instance of a PHM application in vehicular systems, the resultant impacts, and lessons learned with an emphasis on the successes and challenges of the development process and how it influenced the area/field. IJPHM Technical brief template should be used.

**Full Length Papers:** Full Length Papers provide descriptive accounts of the use of PHM within vehicles and their interacting environment. Techniques and apparatus used, results obtained, and lessons learned can be included to share experience with the community. Depending on level of details presented, IJPHM Full paper or Technical Brief template may be used.

**Survey Papers:** Survey papers are of a tutorial or review nature covering PHM tools and approaches or describe the best current practice, detailed characteristics, and performance.

**Special Issue Guest Editors:**

Dr. Yilu Zhang, General Motors Research and Development, Warren, MI, US, yilu.zhang@gm.com  
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**Submission Instructions:** Please submit your manuscripts (abstracts or full paper drafts) at the IJPHM website <https://papers.phmsociety.org/index.php/ijphm/about/submissions>. Use the section "Comments for the Editor" to indicate that the article is being considered for publication in the Special Issue on Advanced Diagnostics and Prognostics for Automotive Systems.

**Invitation to Present:** Accepted papers are eligible for presentation at a future Annual Conference of the PHM Society

**Abstract Due: January 15, 2022.**

**Final Full Papers Due: April 30, 2022.**