12th Annual Conference of the PHM Society 2020

CALL FOR PAPERS

September 28-October 1, 2020
Loews Vanderbilt Hotel, Nashville, TN, USA

12th Annual Conference of the Prognostics and Health Management Society
September 28-October 1, 2020

www.phmconference.org

Organized under the banner of the PHM Society, our annual conference promises to deliver the quality program you are accustomed to. We will bring together the global community of PHM experts from industry, academia, and government in diverse application areas, such as, but not limited to, energy, aerospace, transportation, automotive, human health & performance, smart manufacturing, and industry AI. In addition to technical paper sessions, the conference will also feature workshops, technical demonstrations, expert panel sessions on a plurality of critical issues and applications, a doctoral symposium, Keynote and Luminary speakers, and tutorials free to all registrants. A PHM data analysis competition will be carried out in parallel and the results will be presented during the conference. Leading companies and research institutions will exhibit their products and demonstrate their technologies during the event. Several social events will round up the program by providing opportunities for participants to connect and network with colleagues, including a high-quality career fair and diversity outreach & networking event. The PHM Society will also offer separate, dedicated short courses focused on fundamental PHM concepts and techniques, as well as data analytics before the start of the main conference.

A major differentiator for the PHM Society is its unique approach toward intellectual property rights: *Authors retain copyright in their work while allowing the PHM Society to distribute their work through a Creative Commons License.* As a result, all articles published by the PHM Society are available to the global PHM community via the

IMPORTANT DATES
Key Paper Dates:
Abstracts Due: Apr 03
Abstract Acceptance: **Apr 17**
Papers Due: **May 22**
Paper Acceptance: **Jul 17**
Final Papers Due: **Aug 14**

Key Submission Dates:
Panel Session Proposals:
Mar 4
Technical Session Proposals:
Mar 4
Doctoral Symposium:
May 27
Student Poster Session:
May 27
Prod. Showcase / Tech. Dem.:
May 27

CONF. MGMT. TEAM

Conference Chairs
Dave Larsen
Collins Aerospace

internet for free, without any restrictions, and in short order after the conference.

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www.phmsociety.org

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CALL FOR PAPERS

Prospective authors are invited to contribute full length, original, high-quality papers at www.phmpapers.org. If you are planning to participate, please send us a **short abstract** immediately. This allows us to make sure your proposed paper will fit our publication criteria; this is just a quick screen, not a detailed review. The topics suggested by the conference can be categorized as analysis methods, asset-specific algorithms, prototype implementations, fielded systems, and business case analysis. Both research and industry contributions are welcomed. Submitted papers will be reviewed by experts based on the criteria of content, significance, technical validity, innovation, writing style, accuracy, clarity, simplicity and readability. For more information, please contact the Technical Committee Chairs at tpc@phmconference.org.

Topics of Interest:
- Advanced Sensing & Embedded Devices
- Adaptive Control & Fault Accommodation
- Automotive Systems
- Autonomous / Robotic / Unmanned Systems
- PHM in Aviation (Commercial and Defense) Systems
- CBM Return on Investment & Business Case Analysis
- Cloud Analytics
- Corrosion
- Cybersecurity PHM
- Data Driven Approaches
- Decision Support Systems
- Detection, Diagnostics & Prognostics Methods
- Digital Twin and Digital Thread
- Electronic Transaction and Blockchain
- Energy (e.g., Nuclear, Smart Grid, Wind)
- Enterprise-wide PHM Applications
- Human-centric PHM
- PHM for Human Health and Performance
- Marine, Mining, and Railway Applications
- PHM for Precision Agriculture
- Oil & Gas
- Physics of Failure & Model Based Prediction
- Predictive Analytics
- Smart Grid
- Smart Manufacturing
- Space Technologies and Systems
- Standards, Metrics, and Verification & Validation

CALL FOR PAPERS: SMART CITIES TRACK
Organizers: Gautam Biswas, Abhishek Dubey, Dan Work (Vanderbilt University)

Smart cities have emerged as a priority for research and development across the world. Solutions leverage PHM-related techniques and encompass data science, distributed systems and

Sankaran Mahadevan
Vanderbilt University

Conference Advisors
Karl Reichard
Penn State University
Ravi Rajamani
drR2 consulting

Technical Program
Chetan Kulkarni (co-chair)
KBR, Inc.
Abhinav Saxena (co-chair)
GE Research
Filipe Viana (co-chair)
University of Central Florida
Jose Celaya
Schlumberger
Rupa Das
Lockheed Martin
Turki Mohamad
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Andy Hess
Hess PHM Group

Proceedings
Scott Clements
Lockheed Martin

Publicity
Neil Eklund
PARC
Scott Clements
Lockheed Martin
Kai Goebel
NASA Ames

Panel Sessions
Brian Weiss

social cyber physical systems. The problems of 'closing-the-loop' in all these application areas are compounded due to the spatial and temporal scales of operation, heterogeneity, and complexity of the underlying physical systems, their interaction with socio-economic behaviors, and risks of cybersecurity and privacy. The Smart Cities track is aiming to address these topics. We expect the participants in the track to encompass researchers and professionals from academia, government, and industry.

CALL FOR PANEL SESSION CHAIRS

A panel session chair will moderate panel discussions with other speakers who have expertise in specific topics. Each panelist will provide remarks for no longer than 7 minutes and then participate in a Q&A session with the audience. Ideas for new panels are also welcome. If interested in leading a panel session, please contact us at panels@phmconference.org

Prospective Panel Topics Include:
- Academic/Education
- Aerospace PHM
- Automotive PHM
- Fielded Systems
- MEMS Technologies to Enable PHM
- Oil and Gas
- PHM Applications Deployment
- PHM for Human Health and Performance
- PHM for Precision Agriculture
- Railway PHM
- Manufacturing PHM
- Standards for PHM
- Theoretical Aspects of Prognostics
- Unmanned/ Autonomous Systems

CALL FOR TUTORIAL SPEAKERS

The PHM 2019 Conference tutorials is planning to offer a set of tutorials that are providing coverage of topics of interest to the PHM audience. The tutorials are meant to provide a learning experience to the audience by giving a comprehensive introduction to the particular topic. Proposed tutorials need to address the interests of a varied audience: beginners, developers, designers, researchers, practitioners, and decision makers who wish to learn a given aspect of prognostic health management. For more information or to volunteer as a speaker, please contact Kai Goebel at tutorials@phmconference.org.

Tutorial Topics of Interest may include:
- Asset Health Management
- CBM Policies
- Cost-Benefit Analysis
- Diagnosis and Prognosis
- Life Cycle and Risk Management Methodologies
- PHM System Design and Engineering
- Deep Learning
- Other advanced topics

NIST

PHM Data Challenge
Kurt Doughty
Collins Aerospace
Scott Clements
Lockheed Martin
Jamie Coble
Univ. of Tennessee

Tutorials
Kai Goebel
PARC

Short Course
Jeff Bird
TECnos
George Vachtsevanos
Georgia Tech
Neil Eklund
PARC

Prod. Showcases / Tech. Demos
Jim Larkin
Aerojet Rocketdyne
Laurel Frediani
Sporian Microsystems
Derek DeVries
Northrop Grumman

Poster Session
Jamie Coble
University of Tennessee
Chris Teubert
NASA

Education & Prof. Dev.
Jeff Bird
TECnos
Karl Reichard
Penn State University

Diversity Outreach
Kathryn Elliott
Rolls Royce
Jamie Coble
University of Tennessee

Local Academic Outreach
Sankaran Mahadevan
Vanderbilt University

SAE Liaison
Rhonda Walthall

CALL FOR TECHNOLOGY DEMONSTRATIONS & PRODUCT SHOWCASE AND PRESENTATIONS

The PHM Society invites sponsors to show off their monitoring, diagnostic, and/or prognostic engineering approaches through **Technology Demonstrations** and the **Product Showcase Presentations**.

The concept of the Technology Demonstrations is to offer a true "hands-on" learning experience to conference attendees. Multiple demonstrations will be given as brief tutorials to small groups, scheduled over a two-day period. Each demo will last for 30 – 60 minutes, where attendees will be encouraged to actively participate.

The Product Showcase track offers the opportunity for companies to advertise their products and/or services to conference attendees. Showcase presenters are provided a 10-minute timeslot to give marketing presentations via computer/table, projector, and microphone. Showcase presentations are not intended to be interactive and participants are encouraged to network with audience members after their showcase.

Tech Demo & Product Showcase Topics of Interest:
- Certification and Validation Techniques for Health Management Applications
- Fielded Prognostic or Advanced Diagnostic Systems
- Innovative System Maintenance Approaches
- Monitoring, Diagnostic, and/or Prognostic Hardware/Software Technologies
- Rapid Aging Testing and Analysis Techniques
- Sensors and Sensor Integration for PHM
- System Identification Processes to Support PHM Goals

For more information on either the Technology Demonstrations or the Product Showcase Presentations, please contact us at techdemos@phmconference.org.

Please Note: Demonstration/presentation hardware, software, concepts, material, data, etc., must be cleared for public release prior to the conference.

CALL FOR DOCTORAL SYMPOSIUM APPLICATIONS

The PHM Society Doctoral Symposium will be held as a workshop on **Monday, Sep 28**. Full-time students are invited to submit their thesis ideas to the Doctoral Symposium. It provides an opportunity for graduate students to present their interests and plans at a formative stage in their research. The students will receive structured guidance from a panel of distinguished researchers as well as comments from conference participants and fellow students in a collegial setting. For more information, please contact Jamie Coble at ds@phmconference.org.

SHORT COURSES

The PHM Society will offer again, by high demand, the very

UTC Aerospace Systems
Conference Materials
Scott Clements
Lockheed Martin

Doctoral Symposium
Jamie Coble
University of Tennessee

Conference Finances
Karl Reichard
Penn State University

Website Development
Scott Clements
Lockheed Martin

successful short course on *PHM Fundamentals and Case Studies*, as well as the advanced course on *Analytics for PHM*. **Scheduled for Sep 26-27.**

SPONSORSHIP
Learn how you can support the PHM Society; contact us at sponsorship@phmconference.org for more information

CALL FOR TECHNICAL SESSION CHAIRS
The PHM Society is also seeking individuals to 'champion' a specific topic relevant to PHM that can be realized into a technical paper session during the conference. Technical session chairs will be responsible for proposing a topic (which can be within or outside of the 'Call for Papers Topic Areas'), recruiting paper submissions within this topic area, identifying appropriately-qualified reviewers for submissions within this area, and leading the resultant technical session at the 2019 conference. All prospective papers should be submitted through the conference submission website and will undergo the same review process as papers not submitted for a specific technical session. Please contact Technical Program Committee Chairs at tpc@phmconference.org.

Sincerely,
Dave Larsen and Sankaran Mahadevan
General Chairs
Annual Conference of the PHM Society 2019
chairs@phmconference.org

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