ICRE
RELIABILITY ENGINEERING

2026 10th International Conference on RELIABILITY ENGINEERING

Hangzhou, China July 19-21, 2026

Special Session 7

Artificial Intelligence for Fault Diagnosis and Prognostics of Complex Engineering Systems

Goal

Modern complex engineering systems, such as aerospace systems, autonomous intelligent systems, industrial equipment, and cyber-physical systems, are becoming increasingly sophisticated and interconnected. Ensuring their reliability and operational safety requires advanced techniques for timely fault detection, accurate diagnosis, and reliable prognostics.

Recent advances in artificial intelligence (AI), machine learning, and data-driven modeling have significantly improved the capability of intelligent fault diagnosis and prognostics. AI-based approaches enable systems to learn complex patterns from large volumes of operational data, providing enhanced capabilities for fault detection, fault isolation, health assessment, and remaining useful life prediction. Despite these advances, many challenges remain, including limited labeled fault data, system complexity, heterogeneous sensing information, and the need for robust and interpretable diagnostic models. Addressing these challenges is critical for improving the reliability and resilience of complex engineering systems.

This special session aims to provide a platform for researchers and practitioners to present recent advances in intelligent fault diagnosis and prognostics. The session will highlight novel AI-driven methods, theoretical developments, and practical applications that enhance the reliability and health monitoring capabilities of complex engineering systems.

Topics

Topics of interest include, but are not limited to:

- Artificial Intelligence for Fault Diagnosis and Prognostics
- Data-driven Fault Detection and Diagnosis
- Testing, Sensing and Diagnosis
- Remaining Useful Life (RUL) Prediction
- Intelligent Health State Assessment
- Hybrid Model-based and Data-driven Fault Diagnosis and Tolerant Control Methods
- Multisensor Data Fusion for Intelligent Fault Detection
- Explainable AI for Fault Diagnosis and Prognostics
- Robust and Uncertainty-aware Diagnosis and Prognostics Methods
- Intelligent Monitoring of Complex Engineering Systems
- Applications in Aerospace, Autonomous Systems, and Industrial Equipment
- ….

Chairs

Yang Li, Beihang University, China

Chun Liu, Shanghai University, China

Rentong Chen, Beihang University, China

Cunsong Wang,
Nanjing Tech University, China

Publication

We provide a good opportunity by presenting your updated research knowledge and also by publishing it in the conference proceedings. submitted paper will be peer reviewed by conference committees, and accepted papers will be included into conference proceedings which will be indexed by SCOPUS and Ei compendex.

Submission

1. Full paper (presentation and publication)
- The paper must be written in English.
- All submissions will undergo a peer-review process by the conference committee.
- The paper should be at least FIVE pages including all figures, tables, and references.
- The paper should be submitted as a PDF document in .pdf format.
- submitted paper must be unpublished.
- Accepted papers will be invited for oral presentation or poster presentation and will be included in the conference proceedings.

2. Abstract (presentation only)
- Abstracts will be considered for presentation (oral/poster) only without publication.
- The abstract must be written in English.
- Abstracts should be no more than 300 words and clearly outline the title, purpose, methods, and outcomes of the research or practice being described.
- All submissions will undergo a peer-review process by the conference committee.

* Welcome to submit the paper or abstract by Electronic submission system: https://www.zmeeting.org/submission/icre2026
More details about submission, please visit at: https://www.icre.org/sub.html

Conference Program

July 19, 2026 I CONFERENCE + SHORT COURSE
July 20, 2026 I TECHNICAL EXCELLENCE & TRIBUTE
July 21, 2026 I INNOVATION & FUTURE OUTLOOK
July 17-22, 2026 I PHD SCHOOL PROGRAM

Conference Venue

Conference Venue:
Hangzhou International Innovation Institute of Beihang University
Address:
No. 166, Shuanghongqiao Street, Pingyao Town, Yuhang District, Hangzhou City

Hangzhou, China

Hangzhou, a renowned Jiangnan city blending millennia of heritage and poetic scenery, boasts three world cultural heritage sites. west Lake ripples with romance; Liangzhu Ruins hold ancient wisdom; the Grand canal carries folk vibes. Timeless song Dynasty elegance meets trendy fun, and delicious local cuisine delights the taste buds. A perfect mix of classic and modern, it awaits visitors from all over the world.

Important Dates

Submission Deadline: April 10, 2026
Notification Deadline: May 5, 2026
Camera-ready Date: May 20, 2026

Sponsors LASAR³ Co-sponsors

杭州市北京航空航天大学国际创新研究院（北京航空航天大学国际创新学院）
哈爾濱工業大學 HARBIN INSTITUTE OF TECHNOLOGY

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特别专题 7

人工智能在复杂工程系统故障诊断与预测中的应用

专题目标

现代复杂工程系统，例如航空航天系统、自主智能系统、工业设备和网络物理系统，正变得日益复杂且相互关联。确保其可靠性和运行安全需要先进的技术来实现及时故障检测、准确诊断和可靠预测。

人工智能 (AI)、机器学习和数据驱动建模的最新进展显著提升了智能故障诊断和预测的能力。基于人工智能的方法使系统能够从海量运行数据中学习复杂模式，从而增强故障检测、故障隔离、健康评估和剩余使用寿命预测的能力。在这些方面尽管取得了一些进展，但仍存在诸多挑战，包括标记故障数据有限、系统复杂性、异构传感信息以及对稳健且可解释的诊断模型的需求。应对这些挑战对于提高复杂工程系统的可靠性和韧性至关重要。

本次专题研讨会旨在为研究人员和实践者提供一个平台，展示智能故障诊断和预测领域的最新进展。本次会议将重点介绍新型人工智能驱动方法、理论发展和实际应用，这些方法和应用能够增强复杂工程系统的可靠性和健康监测能力。

专题主题

征稿主题包括但不限于：

- 用于故障诊断和预测的人工智能
- 数据驱动的故障检测和诊断
- 测试、传感和诊断
- 剩余使用寿命 (RUL) 预测
- 健康状态评估
- 基于模型和数据驱动的混合诊断与容错方法
- 用于智能故障检测的多传感器数据融合
- 用于故障诊断和预测的可解释人工智能
- 鲁棒且考虑不确定性的诊断与预测方法
- 复杂工程系统的智能监测
- 在航空航天、自主系统和工业设备中的应用
- …

专题主席

李洋，北京航空航天大学，中国

柳春，上海大学，中国

陈仁同，北京航空航天大学，中国

王村松，南京工业大学，中国

会议出版

会议收录的文章将出版在会议论文集中出版，并提交EI Compendex, Scopus等其他检索机构审核检索。

投稿方式

1). 上传文章到电子投稿系统: https://www.zmeeting.org/submission/icre2026
2). 或发送文章至会议邮箱: icre_conf@outlook.com
提示:
1. 全文投稿（含报告与出版）
- 稿件须以英文撰写。
- 所有投稿均由会议委员会进行同行评审。
- 稿件篇幅不少于 5 页，包含所有图表及参考文献。
- 稿件须以 PDF 格式提交。
- 投稿稿件须为未发表的原创成果。
- 录用稿件将受邀进行口头报告或海报展示，并收录至会议论文集。
2. 摘要投稿（仅作报告）
- 摘要仅用于申请报告资格（口头报告 / 海报展示），不纳入出版范围。
- 摘要须以英文撰写。
- 摘要字数不超过 300 词，须清晰阐明所涉研究或实践的标题、研究目的、研究方法及研究成果。
- 所有投稿均由会议委员会进行同行评审。
• 详细信息请见----https://icre.org/sub.html

会议日程

2026年7月19日- 签到注册
2026年7月20日- 开幕式+主旨报告+作者报告
2026年7月21日- 开幕式+主旨报告+作者报告
2026年7月19-21日- 博士研究生项目

会议地址

杭州市北京航空航天大学国际创新研究院（北京航空航天大学国际创新学院）

地址：杭州市余杭区瓶窑镇双红桥街166号

中国杭州

杭州，一座融千年文脉与诗画风光的江南名城，三大世界文化遗产勾勒其独特魅力。西湖碧波漾诗意，良渚遗址藏远古智慧，大运河流淌南北烟火。宋韵风雅浸润红墙古社，新潮玩法解锁别样体验，鲜醇杭帮菜抚慰味蕾。古典与现代交织，漫步街巷皆是惊喜，正静待八方游客前来探寻。

重要日期

投稿截止日期：2026年4月10日
审稿通知日期：2026年5月05日
注册截止日期：2026年5月20日

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