

Special Session Proposal V

Special Session Basic Information:

专栏题目 Session Title	中文：输电系统智能感知与状态监测技术 英文：Intelligent Sensing and Condition Monitoring Technologies for Transmission Systems
专栏介绍和征稿主题 Introduction and topics	
<p>中文： 随着全球能源结构转型和新型电力系统发展，输电系统作为电网的核心环节，其运行安全性和可靠性面临更高要求。智能感知、物联网、人工智能和大数据等技术的快速发展，为输电系统的实时监测、故障预警和智能运维提供了新的解决方案。本专题聚焦输电系统智能感知与状态监测技术的最新研究进展，旨在促进学术界与工业界的交流与合作，推动输电系统向数字化、智能化方向发展。</p> <p>征稿主题（包括但不限于）</p> <ol style="list-style-type: none">智能传感与监测技术 光纤传感、无线传感器网络、分布式传感技术在输电线路监测中的应用 无人机（UAV）、机器人、遥感图像及激光雷达等技术在输电设备巡检中的创新应用大数据分析 with 智能诊断 基于数据驱动的输电设备异常检测与故障预测 多源异构数据（如气象、负荷、振动数据）的融合分析与状态评估 数字孪生（Digital Twin）技术在输电系统动态建模与仿真中的应用智能运维与韧性提升 极端天气（台风、覆冰、山火等）下的输电系统自适应监测与保护策略 基于 AI 的输电设备寿命预测与健康管理 智能巡检机器人、自主无人机集群在输电运维中的优化调度国际标准与工程实践 智能输电系统的标准化 <p>英文： With the global transformation of the energy structure and the development of new power systems, the transmission system, as a core component of the power grid, faces increasingly stringent requirements for operational safety and reliability. The rapid advancement of technologies such as intelligent sensing, the Internet of Things (IoT), artificial intelligence (AI), and big data offers new solutions for real-time monitoring, fault early warning, and intelligent operation and maintenance (O&M) of transmission systems. This session focuses on the latest research progress in intelligent sensing and condition monitoring technologies for transmission systems. It aims to promote communication and collaboration between academia and industry, and to advance the digital and intelligent development of transmission systems.</p> <p>Topics of Interest (including but not limited to):</p> <ol style="list-style-type: none">Intelligent Sensing and Monitoring Technologies Applications of fiber-optic sensing, wireless sensor networks, and distributed sensing technologies in transmission line monitoring Innovative applications of technologies such as unmanned aerial vehicles (UAVs), robots, remote sensing imagery, and LiDAR in transmission equipment inspection	

2. Big Data Analytics and Intelligent Diagnostics

Data-driven approaches for anomaly detection and fault prediction in transmission equipment
Fusion analysis and condition assessment based on multi-source heterogeneous data (e.g., meteorological, load, vibration data)
Applications of Digital Twin technology in dynamic modeling and simulation of transmission systems

3. Intelligent Operation and Maintenance & Resilience Enhancement

Adaptive monitoring and protection strategies for transmission systems under extreme weather conditions (e.g., typhoons, icing, wildfires)
AI-based life prediction and health management of transmission equipment
Optimized scheduling of intelligent inspection robots and autonomous UAV swarms in transmission system O&M

4. International Standards and Engineering Practices

Standardization of intelligent transmission systems

Special Session Chair(s):

	姓名	陈辉
	Name	Hui Chen
	称谓	教授
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	部门	自动化工程学院
	Department	College of Automation Engineering
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Organizer’s Brief Biography

中文：陈辉，1982 年出生于辽宁葫芦岛。2006 年、2009 年、2014 年，她分别于江苏大学测控技术与仪器专业获得工学学士、上海大学测试计量技术及仪器获得工学硕士学位，上海大学控制理论与控制工程专业获得工学博士学位。2014 年至今，她在上海电力大学工作，现为自动化工程学院教授、副院长。陈辉教授是上海市“浦江人才计划”入选者。近年来，主持国家自然科学基金、科技部国家外专局项目、上海市自然科学基金面上项目等 10 余项。在 IEEE Transactions on Fuzzy Systems、IEEE Transactions on Geoscience and Remote Sensing、Pattern Recognition 等期刊上发表高水平论文 30 余篇。研究方向包括电力三维视觉感知、机器视觉与模式识别等。

英文：Hui Chen was born in Huludao, Liaoning Province, China, in 1982. She received the B.Sc. degree in Measurement and Control Technology and Instruments from Jiangsu University, Zhen jiang, China, in 2006, and the M.Sc. and Ph.D. degrees in Control Theory and Control Engineering from Shanghai University, Shanghai, China, in 2009 and 2014, respectively. She has been working at Shanghai University of Electric Power in China since 2014, and is currently a Professor and Vice-Dean of the School of Automation Engineering. Professor Chen is a recipient of the Shanghai “Pujiang Talent Program.” In recent years, she has led more than ten research projects, including grants from the National Natural Science Foundation of China, the Ministry of Science and Technology / State Administration of Foreign Experts Affairs, and the Shanghai Natural Science Foundation. Professor Chen has published over 30 high-quality journal papers in venues such as IEEE Transactions on Fuzzy Systems, IEEE Transactions on Geoscience and Remote Sensing, and Pattern Recognition. Her research interests include 3D visual perception for power systems, machine vision, and pattern recognition.

	姓名 Name	龚春阳 Chunyang Gong
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Organizer's Brief Biography

中文： 龚春阳，1991 年生于贵州省遵义市，2013 年于上海电力大学电气工程及自动化专业获得工学学士，2014 年于英国斯特拉斯克莱德大学（University of Strathclyde）电子与电气工程专业获得理学硕士学位，2021 年于上海电力大学电气工程专业攻读博士学位。2015 年至今，他在上海电力大学工作，现为自动化工程学院任科研秘书、助理研究员。2018 年至 2019 年，他在全球能源互联网发展合作组织挂职。近年来，主持上海市经信委工业强基专项配套子项，作为主要研究人员参与上海市科技计划项目、上海市科技计划项目、国家电网总部项目等近 10 项。在中国电机工程学报、IEEE Transactions on Industry Applications 等期刊上发表高水平论文。主要研究方向包括：新能源发电控制与规划等。

英文： Chunyang Gong was born in Zunyi, Guizhou Province, China, in 1991. He received the B.Sc. degree in Electrical Engineering and Automation from Shanghai University of Electric Power in 2013 and the M.Sc. degree in Electronic and Electrical Engineering from the University of Strathclyde, Glasgow, U.K., in 2014. He is currently pursuing the Ph.D. degree in Electrical Engineering at Shanghai University of Electric Power (enrolled 2021). He has been working at Shanghai University of Electric Power in China since 2015, and is currently a Scientific Secretary and Assistant Researcher in the School of Automation Engineering. From 2018 to 2019, he was seconded to the Global Energy Interconnection Development and Cooperation Organization (GEIDCO). Dr. Gong has chaired a supporting sub-project of the Shanghai Municipal Commission of Economy and Informatization's Industrial Foundation Enhancement Program and, as a principal researcher, has contributed to nearly ten projects funded by the Shanghai Science and Technology Commission and State Grid Corporation of China, among others. He has published research articles in Proceedings of the CSEE, IEEE Transactions on Industry Applications, and related journals. His research interests include the control and planning of renewable-energy generation systems.