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Computational Intelligence in Reliability and Maintenance

Challenges and Applications

Editors:

Mohamed Arezki Mellal, M'Hamed Bougara University, ALGERIA

Harish Garg, Thapar Institute of Engineering & Technology, Patiala, Punjab, INDIA

This book explores a wide range of topics in reliability and maintenance engineering, including fault diagnosis, prognostics, condition monitoring, risk assessment, optimization, and decision-making. By leveraging computational intelligence techniques—such as artificial intelligence, machine learning, evolutionary algorithms, fuzzy logic, and neural networks—it presents innovative solutions for improving the dependability and lifecycle performance of critical systems and assets. Its primary aim is to bridge the gap between theory and real-world practice, offering insights that combine academic research with industrial applications. Researchers, practitioners, and students in reliability engineering, maintenance management, industrial engineering, and computational intelligence will find a valuable resource for strengthening their knowledge and skill set in data-driven reliability improvement. Special features include practical case studies, hands-on examples, and implementation strategies that demonstrate how intelligent methods can be applied across real maintenance scenarios. The book adopts a multidisciplinary perspective, drawing on expertise from multiple domains to provide a holistic understanding of reliability challenges and smart solutions.

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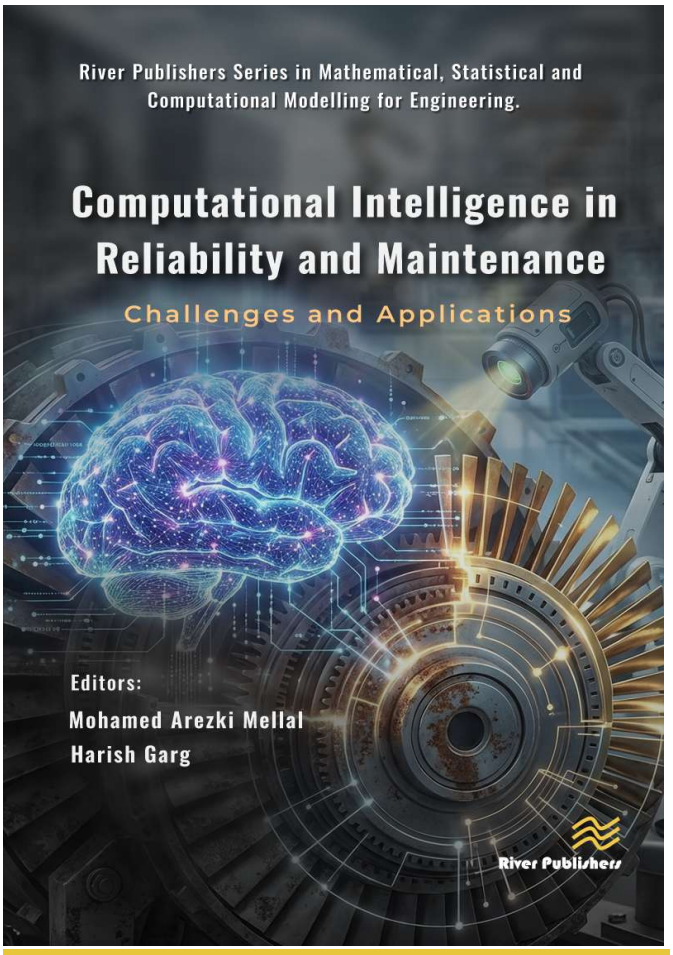

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