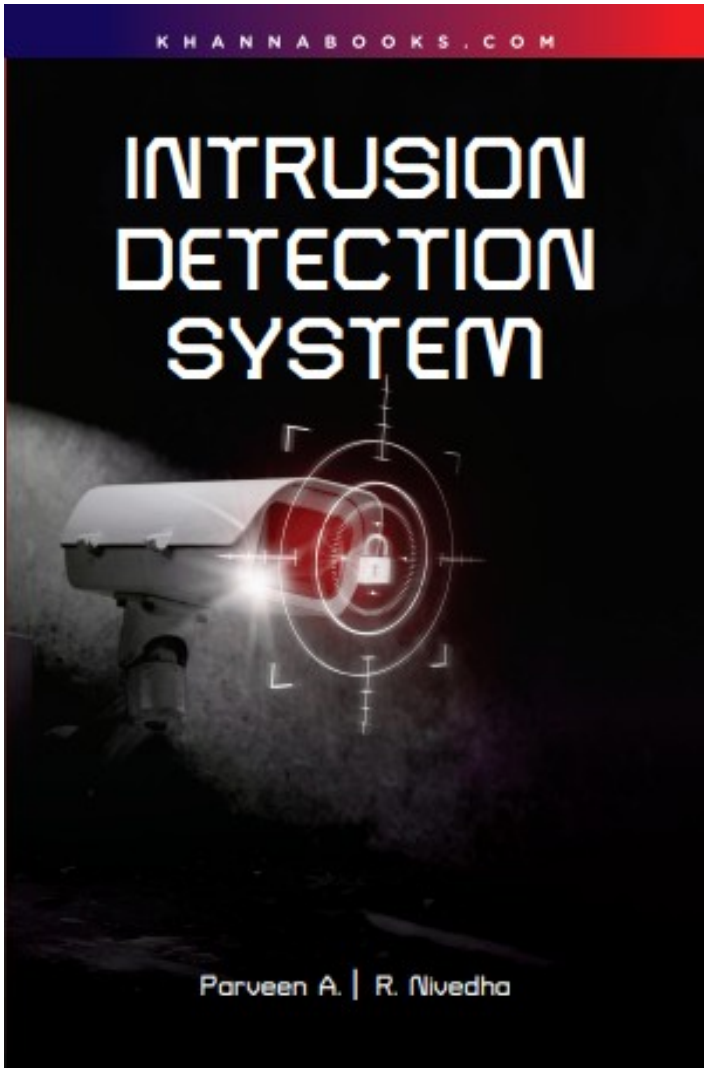

Intrusion Detection Systems

Author :	Parveen A.
ISBN 13 :	978-93-55382-47-4
ISBN 10 :	93-55382-47-2
E-ISBN 13 :	978-93-55382-47-4
Edition :	First
Pages :	100
Type of book :	Paperback
Year :	2025
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 148.00
Categories :	Sathyabama Series
Condition Type :	New
Country Origin :	India

Product Description

Intrusion Detection Systems "INTRUSION DETECTION SYSTEMS" offers a comprehensive and vital resource for navigating the rapidly evolving domain of cybersecurity. Written in an academic yet accessible tone, this book provides a thorough introduction to Intrusion Detection Systems (IDS), exploring their historical evolution, foundational concepts, and critical role in protecting modern digital environments. The core purpose of this text is to bridge the gap between theoretical knowledge and real-world application, equipping readers with the expertise to implement robust security strategies against increasingly sophisticated threats. The book highlights the transformative impact of Machine Learning (ML) and Artificial Intelligence (AI) on IDS, detailing deep learning approaches, ML models for anomaly detection, and feature engineering techniques. It goes beyond traditional methods to address the unique challenges of securing emerging technologies such as the Internet of Things (IoT), cloud-based networks, and blockchain. Furthermore, it delves into advanced techniques like fuzzy logic, genetic algorithms, hybrid models, and real-time IDS using big data analytics. This indispensable guide is meticulously structured with five units and includes detailed case studies, making it an essential text for its target audience: students seeking foundational knowledge, professionals looking to upgrade their deployment strategies, and researchers exploring open challenges like adversarial ML attacks and autonomous IDS development. It serves as a definitive roadmap for enhancing network resilience against the ever-changing cyber threat landscape. **Salient Features:**

- **Core IDS Fundamentals**: Explore the history, evolution, and foundational principles of IDS. Compare signature-based, anomaly-based, and hybrid models, and understand key evaluation metrics like TPR and FPR.
- **AI-Driven Detection**: Master the use of Machine Learning and Deep Learning, including CNNs and LSTMs, to enhance anomaly detection capabilities and prepare large-scale datasets for modern IDS.
- **Securing New Frontiers:** Learn to design and implement specialized IDS for emerging technologies like IoT, cloud computing, and blockchain. Focus on lightweight solutions for resource-constrained mobile and edge environments.
- **Advanced Threat Mitigation**: Investigate cutting-edge techniques such as fuzzy logic and genetic algorithms in IDS. Understand hybrid models, distributed architectures, and real-time big data analytics for large-scale networks.
- **Future**

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