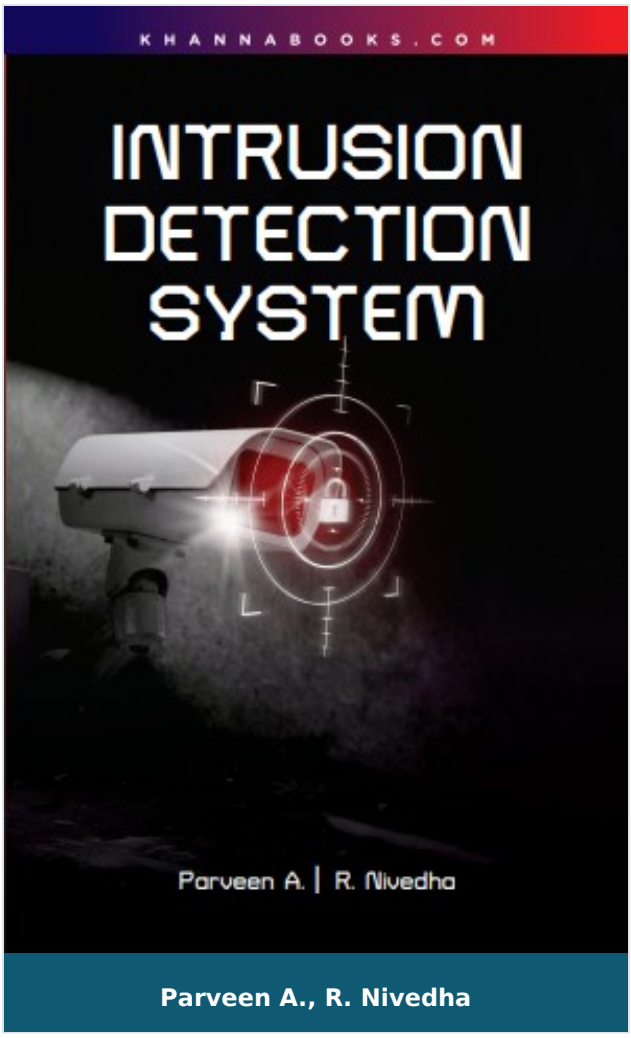



Parveen A., R. Nivedha

# Intrusion Detection Systems

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## 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 Resilience & Research**: Analyze emerging threats and explore future trends like autonomous and self-healing IDS. Study the defense against adversarial ML attacks and the strategic integration with SIEM systems.
- **Real-World Application**: Apply theoretical knowledge through five detailed case studies, including enterprise deployment, advanced financial institution solutions, and securing smart city infrastructure.
- **Defense Architecture**: Clearly differentiate between the passive monitoring role of Intrusion Detection Systems (IDS) and the proactive blocking function of Intrusion Prevention Systems (IPS) in modern security.

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## Table Of Contents


- Introduction to Intrusion Detection Systems
- Machine Learning and Artificial Intelligence In IDS
- IDS for Emerging Technologies
- Advanced Techniques and Hybrid Models
- Future Trends and Research Challenges


## Author


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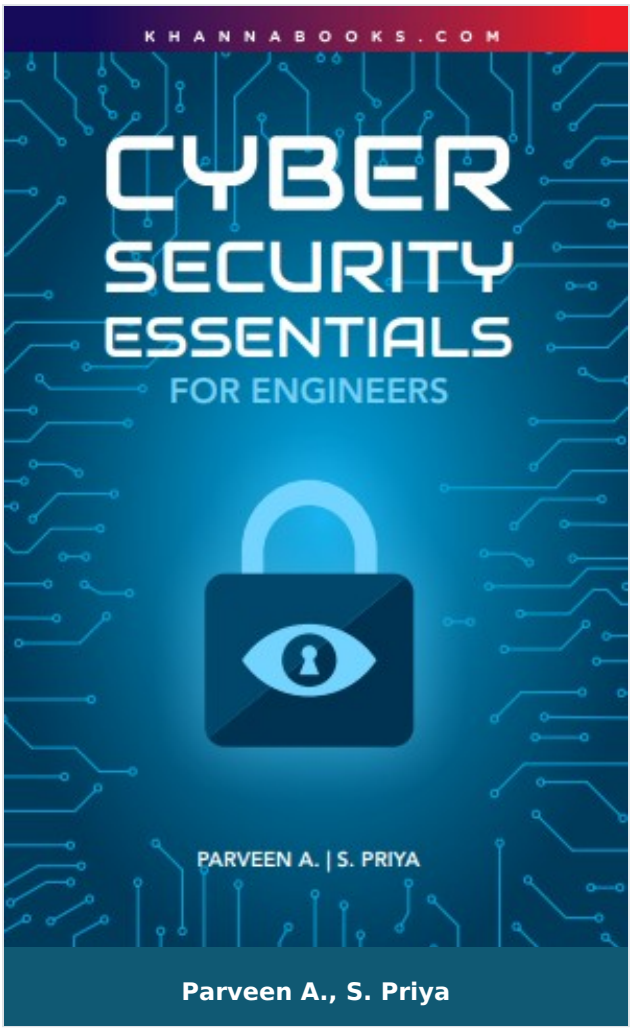
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Parveen A., S. Priya

# Cyber Security Essentials For Engineers

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## Product Description

**Cyber Security Essentials For Engineers**

In today's interconnected world, security is not an add-on; it is an essential engineering discipline. Cybersecurity Essentials for Engineers is the practical, hands-on guide built specifically for engineers, developers, and IT professionals who need to do more than define security—they need to build it.

This book provides a robust foundation, starting with the core security principles: Confidentiality, Integrity, and Availability (CIA Triad), supplemented by critical mechanisms like Authentication and Non-repudiation. It then dives into the technical details of securing communications, exploring the evolution of protocols like SSL/TLS, WPA2, S/MIME, and PGP.

Moving beyond theory, the text focuses on real-world implementation, teaching you to analyze cipher suite negotiations, identify potential attack vectors, and navigate the crucial trade-offs between security and system performance. Packed with practical insights, ethical hacking exercises, and case studies, this resource ensures you are equipped to design, implement, and maintain truly resilient digital systems.

**Salient Features:**

- **Engineering-Centric Foundation**: Master the CIA Triad (Confidentiality, Integrity, Availability) and the importance of robust Authentication and Non-repudiation mechanisms.
- **Protocol Mastery**: Detailed examination of secure communication protocols, tracing their evolution from early standards (SHTTP, WEP, SET) to modern essentials (SSL/TLS, WPA, WPA2).
- **Secure Email and Trust Models**: In-depth coverage of S/MIME, PEM, and PGP, contrasting the PKI and Web of Trust models and addressing key management

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challenges.

- **Practical Attack Analysis**: Learn through packet analysis and ethical hacking exercises to understand implementation details and uncover real-world vulnerabilities.
- **Performance vs. Security**: Explore the critical trade-offs between high security, performance, and usability in system design.
- **Dispelling Myths**: Directly addresses and corrects common security misconceptions, such as "encryption alone guarantees security" or "hiding the SSID is enough."
- **Best Practices**: Emphasizes the need for strong passwords/passphrases and the continuous imperative to stay current with emerging threats and protocol updates.

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## Table Of Contents


- Preface
- Introduction to Cybersecurity
- Cybersecurity – Threats & Attacks
- Security Tools & Technologies
- Cryptography
- Protocols for Secure Communication


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**Parveen A.**

# Blockchain Design & Use Cases

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## Product Description

**Blockchain Design & Use Cases**

“BLOCKCHAIN DESIGN & USE CASES" is a comprehensive and expertly structured guide designed to equip readers with a mastery of the transformative technology that is blockchain. This book bridges theoretical concepts with practical use cases, highlighting blockchain's immense potential to revolutionize industries by ensuring transparency, security, and decentralization. The journey begins with foundational principles, tracing the evolution from digital money to Distributed Ledger Technology (DLT) and detailing key design primitives such as cryptographic hashing, digital signatures, and consensus mechanisms.

The core purpose is to provide readers with actionable knowledge, moving beyond mere theory to practical application. The text offers an in-depth focus on the enterprise-grade platform Hyperledger Fabric, covering its components, chaincode development, and the decomposition of its consensus process. Furthermore, it provides extensive coverage of real-world scenarios across critical sectors, including financial systems (settlements, KYC, capital markets), supply chain management (provenance, trade finance), and government use cases (digital identity, land records).

Targeted at a diverse audience, including students, developers, researchers, and business leaders alike, this text serves as both a detailed academic resource and a practical gateway for innovation. With thoughtfully designed exercises, summaries, and additional resources at the end of each unit, this book ensures readers are well-prepared to navigate, contribute to, and leverage the rapidly evolving blockchain ecosystem for the future.

**Salient Features:**

- **Foundational Concepts**: Begins with a strong base, covering the evolution from digital money to DLT, basic crypto primitives, and fundamental blockchain architecture.
- **Consensus Protocols**: Explores the requirements, scalability challenges, and specific mechanisms like Proof of Work (PoW) and those designed for permissioned blockchain networks.
- **Hyperledger Fabric**: Provides an in-depth analysis of this key enterprise framework, detailing its components, consensus decomposition, and chaincode design and implementation.
- **Finance Applications**: Dedicated coverage of blockchain use in financial systems for streamlining settlements, automating KYC/AML, and digitizing capital markets.
- **Supply Chain Focus**: Details practical applications in trade/supply chain, focusing on ensuring goods' provenance, supply chain finance, and invoice management and discounting.
- **Government Use Cases**: Investigates transformative public sector applications, including digital identity management, land records, and secure implementation in public distribution systems.
- **Security & Privacy**: Discusses advanced cryptographic primitives, permissions, and contemporary privacy measures like Zero-Knowledge Proofs to secure data on the ledger.
- **Pedagogical Tools**: Each unit is reinforced with solved problems (Beginner to Advanced), exercises, summaries, and "Teacher's Know More" sections for comprehensive learning.

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## Table Of Contents


- Introduction to blockchain
- Consensus
- Hyperledger fabric
- Use cases 1 & 2
- Use case 3


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