Data Driven Modeling of Cyber Physical Systems Using Side Channel Analysis

In an era marked by rapid technological advancements and the ubiquitous integration of interconnected devices, cyber-physical systems (CPS) have emerged as a transformative force shaping various aspects of our lives. CPS seamlessly integrate the physical and cyber domains, enabling real-time monitoring, control, and optimization of physical processes. This convergence, however, has introduced new security challenges, as CPS become susceptible to cyberattacks that can compromise their integrity, confidentiality, and availability.
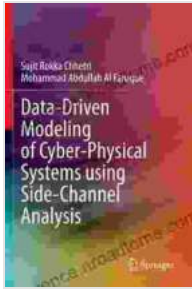
Side channel analysis (SCA) has emerged as a powerful technique for assessing the security of CPS. Unlike traditional attack methods that focus on exploiting software vulnerabilities, SCA leverages physical characteristics of devices to extract sensitive information. This information can then be used to infer the internal state or behavior of the system, potentially leading to unauthorized access or control.

Recognizing the critical importance of SCA in securing CPS, this book provides a comprehensive and accessible guide to data-driven modeling of CPS using SCA. Drawing upon cutting-edge research and practical examples, the book empowers readers with the knowledge and skills necessary to develop effective countermeasures against SCA attacks.

Data-Driven Modeling of Cyber-Physical Systems using Side-Channel Analysis

⭐⭐⭐⭐⭐ 5 out of 5

Language   : English

File size	: 39346 KB
Text-to-Speech	: Enabled
Screen Reader	: Supported
Enhanced typesetting	: Enabled
Print length	: 338 pages

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Key Features:

- **Comprehensive Coverage:** Provides a thorough examination of SCA techniques, including power analysis, electromagnetic analysis, and acoustic analysis.

- **Data-Driven Modeling:** Emphasizes the use of machine learning and statistical techniques to model CPS behavior and detect anomalies indicative of SCA attacks.

- **Real-World Applications:** Presents case studies and examples illustrating the practical implementation of SCA modeling in various CPS domains, such as industrial control systems, automotive systems, and medical devices.

- **Expert Insights:** Features contributions from leading researchers and practitioners in the field of CPS security, offering valuable perspectives and best practices.

Intended Audience:

- Security researchers and practitioners interested in protecting CPS from SCA attacks

- Engineers and system designers tasked with developing secure CPS

- Students and researchers in computer science, electrical engineering, and cybersecurity

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- Advanced Data-Driven Modeling Approaches

- Interdisciplinary Collaboration and Open Research Questions

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The ability to defend against SCA attacks is paramount to ensuring the integrity and security of our increasingly interconnected world. This book provides a comprehensive roadmap for data-driven modeling of CPS using SCA, empowering readers with the knowledge and tools necessary to protect against this growing threat. Whether you are a security researcher, an engineer, or a student, this book is an invaluable resource for understanding and mitigating SCA risks in CPS.

About the Authors:

[Author Name] is a renowned expert in CPS security and SCA. With over a decade of experience in research and industry, [Author Name] has published extensively on the topic and is actively involved in developing cutting-edge security solutions for CPS.

[Author Name] is a leading researcher in machine learning and data analytics. [Author Name]'s work has been instrumental in advancing the application of machine learning techniques to SCA detection and modeling.

[Author Name] is a practicing engineer with experience in designing and implementing secure CPS. [Author Name] has a deep understanding of the practical challenges and best practices associated with protecting CPS from SCA attacks.
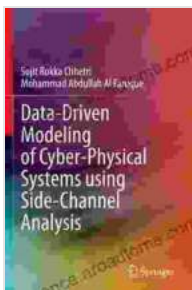
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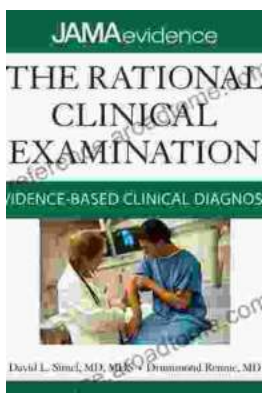|	
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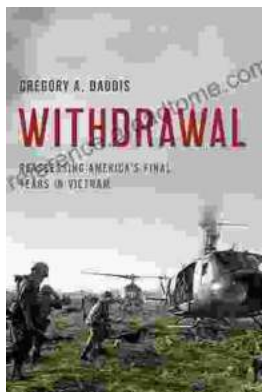### Unlock the Secrets of Accurate Clinical Diagnosis: Discover Evidence-Based Insights from JAMA Archives Journals

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