Understanding and Applying Cryptography and Data Security

By Adam J. Elbirt

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A How-to Guide for Implementing Algorithms and Protocols
Addressing real-world implementation issues, **Understanding and Applying Cryptography and Data Security** emphasizes cryptographic algorithm and protocol implementation in hardware, software, and embedded systems. Derived from the author's teaching notes and research publications, the text is designed for electrical engineering and computer science courses.

Provides the Foundation for Constructing Cryptographic Protocols
The first several chapters present various types of symmetric-key cryptographic algorithms. These chapters examine basic substitution ciphers, cryptanalysis, the Data Encryption Standard (DES), and the Advanced Encryption Standard (AES). Subsequent chapters on public-key cryptographic algorithms cover the underlying mathematics behind the computation of inverses, the use of fast exponentiation techniques, tradeoffs between public- and symmetric-key algorithms, and the minimum key lengths necessary to maintain acceptable levels of security. The final chapters present the components needed for the creation of cryptographic protocols and investigate different security services and their impact on the construction of cryptographic protocols.

Offers Implementation Comparisons
By examining tradeoffs between code size, hardware logic resource requirements, memory usage, speed and throughput, power consumption, and more, this textbook provides students with a feel for what they may encounter in actual job situations.

A solutions manual is available to qualified instructors with course adoptions.

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Editorial Review

Review

This book is a good technical reference for someone who wishes to implement (or install) a security system based on existing techniques … a good complementary book for a technical course to students who already know about the theory of cryptography but need to learn the technical details in order to implement existing protocols in new hardware.
?Jeremy Barbay, University of Chile, in *SIGACT NEWS*, December 2011

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