Preface

Homeland security issues have attracted much attention in the last two decades, and it happens to be a major concern for many countries today. Considering the global scenario, many third world countries, European countries and even few developed countries suffer from the crisis of terrorism and identity counterfeiting. Disruptive and terrorist groups are potentially making their way to creating instability among people, killing innocent people and destructing public and private properties are a few such examples of dreadful crimes. In addition to internal and external disruptions, many other types of systematic deceitful activities related to identity verification are becoming part of homeland security issues. Therefore, on national interest and safeguarding the domestic environment from the outrageous and spiteful groups, homeland security becomes a key for providing COTS (Conventional-Off-the-Shelf) technology and security artifacts to the troops and entities who are responsible for maintaining stability and peaceful environment within a country as well as protecting border regions from external intruders. Homeland security focuses on a few key sectors which may be a potential threat to a country and its people, and therefore to curb the threats, these sectors need constant surveillance of security agencies and technology enabled artifacts. Homeland security consists of the sectors which are identified as priority areas, such as border infiltration, counter-terrorism, identity management, critical infrastructures, maritime security, city surveillance, intelligence, police and military modernization. In order to conquer the attacks in these areas, homeland security is aimed to provide enabled security tools and systematic identity mechanisms for protecting innocent people and strengthening the environment from emerging criminal activities and terrorism.

This Handbook has received contributions from leading educators, researchers and homeland security experts who have expertise in developing high-performance security systems and able to customize in preparing to use these technologies for certain security sector when the situation demands. This book is successfully melting the homeland security issues with design and development factors together in a lucid manner. It showcases the processes and methods of addressing security issues and manipulating visual as well as non-visual information to provide high-end security measures with the help of digital advancement of network and satellite communication, signal processing, video and image processing, and warfare technologies. In addition to advanced security measures, this book also explains the causes of social, economic, religious and political hindrances and aggressiveness that lead to major outbreaks of disruptive situations and terrorist activities. The Handbook would be a nice reference point for budding engineers, technocrats, researchers, educators, security experts and social scientists who would be interested to study homeland security issues and offer efficient solutions by implementing technologies for counterterrorism and identity counterfeiting.

The purpose of editing this Handbook is to present the homeland security issues in a coherent manner as well as to discuss the socio-economical, religious and political causes behind disruptive situations and social unrest. Also, the Handbook also discusses the technologies and systems through which police, paramilitary forces and security agencies can able to curb the crimes and criminals. There are a total 19 chapters in this Handbook. Chapter 1 presents different types of terrorism, which arise under distinct political and social environments. The chapter also discusses various topologies and sub-classifications of accepted topologies under distinct groups. Chapter 2 explains proactive and adaptive security management driven process to protect the critical homeland assets which are vital to government, business houses and to any person. Due to war between countries, major terrorist attacks and natural catastrophes infrastructural assets could be a loss. Therefore, to protect the major loss, adaptive security management system will be proved to be beneficial. Chapter 3 aims to assess the cross-sectional relationship between Native American Tribes and the U.S. Government within the context of homeland security and unified system of emergency management policy. Chapter 4 describes the in-depth analysis of transnational crimes and the strategies that US police agency and the traditional security agencies like FBI and CIA have adopted at their disposal to combat it. This chapter also discusses the tools and technologies that the security agencies can use in pursuit of homeland security directives. Chapter 5 investigates the situations of political uprisings, civil wars, terrorisms, corruptions and fighting on natural resources in west and east African countries, especially in Kenya and Nigeria. This chapter also suggests various strategies and methods to provide security assurance to the citizens and the way to restore peace and stability in the country. Chapter 6 presents a document analysis on illegal drug flows and drug trafficking in USA and Jamaica. It also discusses the security challenges and the ways to explore the border security measures to reduce this problem. Chapter 8 presents a comprehensive overview of various spoofing and anti-spoofing biometrics systems built on fingerprint, face and iris as well as on multimodal biometrics system. It also compares the experimental results determined from various systems. Chapter 9 investigates some intrusion detection prevention techniques to detect malicious codes in the form of computer viruses. The techniques are mostly based on artificial neural networks, artificial immunity system, and network profiling. They also use simple association data mining methods to process the network data. Chapter 10 is based on multi-factor authentication, and it discusses the issues of the uniqueness of dynamic biometrics signatures of behavioral biometrics traits for person authentication. Chapter 11 presents a survey on current developments of various search space reduction techniques for biometrics databases. This chapter mainly discusses the techniques based on fingerprint, palmprint, and iris. The techniques are classified as hierarchical matching, classification, indexing, texture and color based. Chapter 12 presents a brief overview of physical layer security and reasonable solutions with quantitative measurement of secrecy performance for multiuser wireless networks. Chapter 13 presents a window operating system based login system built on behavioral biometrics pieces of evidence such as keystroke, mouse, software interaction and hardware usage for continuous person authentication. It also examines proactive forensics and intrusion detection facilities available with the system. Chapter 14 discusses evaluation framework of keystroke dynamics authentication system, and it also provides a comprehensive analysis of collected features using physical and touch screen keyboard. Chapter 15 presents a wrapper based classification approach for person recognition using keystroke dynamics features. The method is tested on publicly available benchmark database as well as on real-time database. Chapter 16 examines the concept of Internet of Things (IoT) to design the novel security architectures for multiple platforms to combat cyber terrorism.

Last but not least, we believe that this Handbook would help readers from many diverse fields of identity management and homeland security, to build their own security systems and define the architectures in an effective way. In this Handbook, we have carefully selected and included the chapters by considering their relevancy towards homeland security issues and various social aspects. We have also tried to examine and explain the technologies which could be proved to be essential parts of security agencies and defense administrations. To make these chapters easy to understand, a sufficient number of graphical illustrations, images, diagrams, and tables are included in each chapter and explained them in an unpretentious way. Hope that, our small efforts would be appreciated to bring these chapters together in this valuable Handbook.

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