Uas Detection Classification And Neutralization Market

Exposure to noise at home, at work, while traveling, and during leisure activities is a fact of life for all Americans. At times noise can be loud enough to damage hearing, and at lower levels it can disrupt normal living, affect sleep patterns, affect our ability to concentrate at work, interfere with outdoor recreational activities, and, in some cases, interfere with communications and even cause accidents. Clearly, exposure to excessive noise can affect our quality of life. As the population of the United States and, indeed, the world increases and developing countries become more industrialized, problems of noise are likely to become more pervasive and lower the quality of life for everyone. Efforts to manage noise exposures, to design quieter buildings, products, equipment, and transportation vehicles, and to provide a regulatory environment that facilitates adequate, cost-effective, sustainable noise controls require our immediate attention. Technology for a Quieter America looks at the most commonly identified sources of noise, how they are characterized, and efforts that have been made to reduce noise emissions and experiences. The book also reviews the standards and regulations that govern noise levels and the federal, state, and local agencies that regulate noise for the benefit, safety, and wellness of society at large. In addition, it presents the cost-benefit trade-offs between efforts to mitigate noise and the improvements they achieve, information sources available to the public on the dimensions of noise problems and their mitigation, and the need to educate professionals who can deal with these issues. Noise emissions are an issue in industry, in communities, in buildings, and during leisure activities. As such, Technology for a Quieter America will appeal to a wide range of stakeholders: the engineering community; the public; government at the federal, state, and local levels; private industry; labor unions; and nonprofit organizations. Implementation of the recommendations in Technology for a Quieter America will result in reduction of the noise levels to which Americans are exposed and will improve the ability of American industry to compete in world markets paying increasing attention to the noise emissions of products.

These proceedings represent the work of contributors to the 16th International Conference on Cyber Warfare and Security (ICCWS 2021), hosted by joint collaboration of Tennessee Tech Cybersecurity Education, Research and Outreach Center (CEROC), Computer Science department and the Oak Ridge National Laboratory, Tennessee on 25-26 February 2021. The Conference Co-Chairs are Dr. Juan Lopez Jr, Oak Ridge National Laboratory, Tennessee, and Dr. Ambareen Siraj, Tennessee Tech’s Cybersecurity Education, Research and Outreach Center (CEROC), and the Program Chair is Dr. Kalyan Perumalla, from Oak Ridge National Laboratory, Tennessee. This United States Army manual, Army Techniques Publication ATP 5-0.2-1 Staff Reference Guide Volume I Unclassified Resources December 2020, provides staff members with a reference guide to assess, plan, prepare, and execute operations in large-scale combat operations. The guide provides a consolidated location for key planning tools and example techniques to help staff members perform their duties. Most of this guide's content is contained in other, more in-depth doctrinal publications, which are referenced within each topic. Army Techniques Publication ATP 5-0.2-1 Staff Reference Guide Volume I Unclassified Resources December 2020 is applicable to all members of the Army profession: leaders, Soldiers and Army Civilians. The principal audience are staff members serving on battalion, brigade, or division staffs. Trainers and educators throughout the Army will also use this publication. A number of experiments carried out in the last two decades, have led to the development of lasers as the next generation weapon system. A number of defense companies are carrying out research in this field and have achieved varying degrees of progress in constructing a high energy weapon. Laser technology has observed great scientific developments and engineering improvements that make it usable for various commercial, industrial, medical and scientific applications. There is variety of lasers available in the market today with different wavelengths, spectral bandwidth, power levels, operating efficiencies and temporal characteristics. This increasing maturity of lasers and compact optical systems has enhanced their capabilities for military operations. Military officials have indubitably always been interested in laser technology, even before the first laser was invented. Especially, since these devices can bring technological revolution in warfare, when used as range- finders, target designation, sensors, active illumination, data relay devices, directed energy weapons, weather modifier and much more. This book will be of valuable to students and practicing engineers providing with practical study of laser applications, used by the military, to carry out tactical operations on the ground or space-based platforms. Starting in the early 1970s, a type of programmed cell death called apoptosis began to receive attention. Over the next three decades, research in this area continued at an accelerated rate. In the early 1990s, a second type of programmed cell death, autophagy, came into focus. Autophagy has been studied in mammalian cells for many years. The recen

Sea mines have been important in naval warfare throughout history and continue to be so today. They have caused major damage to naval forces, slowed or stopped naval actions and commercial shipping, and forced the alteration of strategic and tactical plans. The threat posed by sea mines continues, and is increasing, in today's world of inexpensive advanced electronics, nanotechnology, and multiple potential enemies, some of which are difficult to identify. This report assesses the Department of the Navy's capabilities for conducting naval mining and countermining sea operations. The use of Unmanned Aerial Vehicles (UAVs) or 'drones' continues to increase, and keeping up to date with technological, legal and commercial developments related to this domain is important, particularly with regard to safety and security in regional and border security operations. This book presents edited contributions from the NATO Advanced Training Course (ATC) entitled “Modern technologies enabling safe and secure UAV operation in urban airspace”, held in Agadir, Morocco, from 25 to 30 November 2019.
Participants included experienced scientists and industry engineers involved in UAV development and activity, and the aim of the ATC was to increase awareness among all NATO and partner countries of the safety and security challenges raised by UAV flights in urban airspace, as well as sharing the knowledge and expertise of specialists working to advance the technologies and capabilities that will enhance safety and security across NATO and its partner countries. The ATC began with a presentation about current UAV technologies, and the technological features that might present a threat to the safety of commercial or military airspace applications. Other topics covered included the U-space concept; management of UAV operations in controlled airspace; integration of manned and unmanned aviation; testing and certification of UAs; autonomous UAV flights; application of UAS in urban airspace; and BVLOS flights and sensors for UAV navigation and communication. The book will be of interest to all those working with UAVs or seeking to develop and encourage their use, particularly for security purposes.

The purpose of this document is to describe a vision for the continued integration of unmanned systems into the Department of Defense (DoD) Joint force structure and to identify steps that need to be taken to affordably execute this integration. DoD has seen rapid growth, sparked in large part by the demands of the current combat environment, in the development, procurement, and employment of unmanned systems. Today's deployed forces have seen how effective unmanned systems can be in combat operations. This experience has created expectations for expanding the roles for unmanned systems in future combat scenarios. This roadmap establishes a vision for the next 25 years and outlines major areas where DoD and industry should focus to ensure the timely and successful adoption of unmanned systems.

The U.S. Navy is ready to execute the Nation's tasks at sea, from prompt and sustained combat operations to every-day forward-presence, diplomacy and relief efforts. We operate worldwide, in space, cyberspace, and throughout the maritime domain. The United States is and will remain a maritime nation, and our security and prosperity are inextricably linked to our ability to operate naval forces on, under and above the seas and oceans of the world. To that end, the Navy executes programs that enable our Sailors, Marines, civilians, and forces to meet existing and emerging challenges at sea with confidence. Six priorities guide today's planning, programming, and budgeting decisions: (1) maintain a credible, modern, and survivable sea based strategic deterrent; (2) sustain forward presence, distributed globally in places that matter; (3) develop the capability and capacity to win decisively; (4) focus on critical afloat and ashore readiness to ensure the Navy is adequately funded and ready; (5) enhance the Navy's asymmetric capabilities in the physical domains as well as in cyberspace and the electromagnetic spectrum; and (6) sustain a relevant industrial base, particularly in shipbuilding.


This book gathers selected high-quality research papers presented at International Conference on Advanced Computing and Intelligent Technologies (ICACIT 2021) held at NCR New Delhi, India, during March 2021, 2021, jointly organized by Galgotias University, India, and Department of Information Engineering and Mathematics Universita Di Siena, Italy. It discusses emerging topics pertaining to advanced computing, intelligent technologies, and networks including AI and machine learning, data mining, big data analytics, high-performance computing network performance analysis, Internet of things networks, wireless sensor networks, and others. The book offers a valuable asset for researchers from both academia and industries involved in advanced studies.

Assesses in what ways and to what degree unmanned surface vehicles are suitable for supporting U.S. Navy missions and functions.

UAS Detection Classification and Neutralization Market Survey 2015

The 15 chapters in this book explore the theoretical as well as a number of technical research outcomes on all aspects of UAVs. UAVs have widely differing applications such as disaster management, structural inspection, goods delivery, transportation, localization, mapping, pollution and radiation monitoring, search and rescue, farming, etc. The advantages of using UAVs are countless and have led the way for the full integration of UAVs, as intelligent objects into the IoT system. The book covers cover such subjects as:

Efficient energy management systems in UAV based IoT networks IoE enabled UAVs Mind-controlled UAV using Brain-Computer Interface (BCI) The importance of AI in realizing autonomous and intelligent flying IoT Blockchain-based solutions for various security issues in UAV-enabled IoT The challenges and threats of UAVs such as hijacking, privacy, cyber-security, and physical safety.

July 2019 Printed in BLACK AND WHITE The Army's Weapon Systems Handbook was updated in July 2019, but is still titled "Weapon Systems Handbook 2018." We are printing this in black and white to keep the price low. It presents many of the acquisition programs currently fielded or in development. The U.S. Army Acquisition Corps, with its 36,000 professionals, bears a unique responsibility for the oversight and systems management of the Army's acquisition lifecycle. With responsibility for hundreds of acquisition programs, civilian and military professionals collectively oversee research, development and acquisition activities totaling more than $20 billion in Fiscal Year 2016 alone. Why buy a book you can download for free? We print this so you don't have to. We at 4th Watch Publishing are former government employees, so we know how government employees actually use the standards. When a new standard is released, somebody has to print it, punch holes and put it in a 3-ring binder. While this is not a big deal for a 5 or 10-page document, many DoD documents are over 400 pages and printing a large document is a time- consuming effort. So, a person that's paid $25 an hour is spending hours simply printing out the tools needed to do the job. That's time that could be better spent doing mission. We publish these documents so you can focus on what you are there for.
It's much more cost-effective to just order the latest version from Amazon.com. SDVOSB If there is a standard you would like published, let us know. Our web site is usgovpub.com

The development of inexpensive small unmanned aircraft system (sUAS) technologies and the growing desire of hobbyists to have more and more capability have created a sustained sUAS industry, however these capabilities are directly enabling the ability of adversaries to threaten U.S. interests. In response to these threats, the U.S. Army and other Department of Defense (DoD) organizations have invested significantly in counter-sUAS technologies, often focusing on detecting radio frequency transmissions by sUAS and/or their operators, and jamming the radio frequency command and control links and Global Positioning System signals of individual sUASs. However, today's consumer and customized sUASs can increasingly operate without radio frequency command and control links by using automated target recognition and tracking, obstacle avoidance, and other software-enabled capabilities. The U.S. Army tasked the National Academies of Sciences, Engineering, and Medicine to conduct a study to address the above concerns. In particular, the committee was asked to assess the sUAS threat, particularly when massed and collaborating; assess current capabilities of battalion-and-below infantry units to counter sUASs; identify counter-sUAS technologies appropriate for near-term, mid-term, and far-term science and technology investment; consider human factors and logistics; and determine if the Department of Homeland Security could benefit from DoD efforts. This abbreviated report provides background information on the full report and the committee that prepared it.

The purpose of this document is to briefly frame the challenges of detecting low, slow, and small unmanned aerial systems (UAS). The conclusion drawn from internal discussions and external reports is the following: detection of small unmanned aerial systems (UAS) is a challenging problem that can not be achieved with a single detection modality for all potential targets. Classification of small unmanned aerial systems, especially classification in the presence of background clutter (e.g., urban environment) or other non-threatening targets (e.g., birds), is under-explored. Though information of available technologies is sparse, many of the existing options for UAS detection appear to be in their infancy (when compared to more established ground-based air defense systems for larger and/or faster threats). Companies currently providing or developing technologies to combat the UAS safety and security problem are certainly worth investigating, however, no company has provided the statistical evidence necessary to support robust detection, identification, and/or neutralization of small unmanned aerial systems. The results of a market survey are included that highlights potential commercial entities that could contribute some technology that assists in the detection, classification, and neutralization of a small unmanned aerial system. This survey found clear and obvious commercial solution, though recommendations are given for further investigation of several potential systems.

Given the popularity of drones and the fact that they are easy and cheap to buy, it is generally expected that the ubiquity of drones will significantly increase within the next few years. This raises questions as to what is technologically feasible (now and in the future), what is acceptable from an ethical point of view and what is allowed from a legal point of view. Drone technology is to some extent already available and to some extent still in development. The aim and scope of this book is to map the opportunities and threats associated with the use of drones and to discuss the ethical and legal issues of the use of drones. This book provides an overview of current drone technologies and applications and of what to expect in the next few years. The question of how to regulate the use of drones in the future is addressed, by considering conditions and contents of future drone legislation and by analyzing issues surrounding privacy and safeguards that can be taken. As such, this book is valuable to scholars in several disciplines, such as law, ethics, sociology, politics and public administration, as well as to practitioners and others who may be confronted with the use of drones in their work, such as professionals working in the military, law enforcement, disaster management and infrastructure management.

Individuals and businesses with a specific interest in drone use may also find in the nineteen contributions contained in this volume unexpected perspectives on this new field of research and innovation. Bart Custers is Associate Professor and Head of Research at eLaw, the Center for Law and Digital Technologies at Leiden University, The Netherlands. He has presented his work at international conferences in the United States, China, Japan, the Middle East and throughout Europe and has published over 80 scientific, professional and popularizing publications, including three books. Which military missions for unmanned underwater vehicles (UUVs) appear most promising to pursue in terms of military need, operational and technical risks, alternatives, and cost? To answer this question, the authors assess risks associated with using UUVs for advocated missions, identify non-UUV alternatives that may be more appropriate for such missions, and analyze potential costs associated with UUV development and use. They conclude that seven missions: mine countermeasures, deployment of leave-behind surveillance sensors or sensor arrays, near-land and harbor monitoring, oceanography, monitoring underwater infrastructure, anti-submarine warfare tracking, and inspection/identification - appear most promising. Among other recommendations, the authors suggest that the U.S. Navy consolidate its unmanned system master plans and establish relevant priorities in coordination with the Office of the Secretary of Defense. Increased emphasis on the use of surface platforms rather than submarines as host platforms is recommended. Written by a team of experts at the forefront of the cyber-physical systems (CPS) revolution, this book provides an in-depth look at security and privacy, two of the most critical challenges facing both the CPS research and development community and ICT professionals. It explores, in depth, the key technical, social, and legal issues at stake, and it provides readers with the information they need to advance research and development in this exciting area. Cyber-physical systems (CPS) are engineered systems that are built from, and depend upon the seamless integration of computational algorithms and physical components. Advances in CPS will enable capability, adaptability, scalability, resiliency, safety, security, and usability far in excess of what today's simple embedded systems can provide. Just as the Internet revolutionized the way we interact with information, CPS technology has already begun to transform the way people interact with engineered systems. In the years ahead, smart CPS will drive innovation and competition across industry sectors, from agriculture, energy, and transportation, to architecture, healthcare, and manufacturing. A priceless source of practical information and inspiration, Security and Privacy in Cyber-Physical Systems: Foundations, Principles and Applications is certain to have a profound impact on ongoing R&D and education at the confluence of security, privacy, and CPS.
The Islamic State is a group known for doing things a bit differently, for its capacity for innovation, and for its many 'firsts.' Two of those 'firsts' happened within months of each other. The first occurred in October 2016 when the group used a bomb-laden drone to attack, after the explosive hidden within the drone killed two Kurdish peshmerga soldiers who were investigating the device. Another 'first' happened in January 2017 when the Islamic State released a propaganda video that showed nearly a dozen examples of the group releasing munitions on its enemies from the air with a fair degree of accuracy via quadcopter drones it had modified. And it wasn't long before the group's bomb-drop capable drones would go on to kill, too. After reaching a high point in the spring of 2017, the scale of the Islamic State drone threat—like many other dimensions of the group and its power—has already been significantly degraded. A surprisingly little amount of analytical attention, however, has been given to how the Islamic State was able to pull off its drone feats and bring its program to scale in a relatively short amount of time. This report seeks to address this gap by evaluating the main factors that helped the Islamic State to effectively use modified commercial drones as weapons. It also highlights some of the broader threat and policy implications associated with the Islamic State's pioneering use of drones. This compilation includes a reproduction of the Strategic Planning Guidance (SPG), to guide military departments and defense agencies toward logically and systematically migrating applicable mission capabilities to this new class of military tools. This Roadmap highlights the most urgent mission needs that are supported both technologically and operationally by various unmanned systems. These needs, listed below, should be considered when prioritizing future research, development, and procurement of unmanned systems technology to ensure an effective return on the Department's investment.

Explains how existing and proposed law seek to tackle challenges posed by new and emerging technologies in war and peace.

This book constitutes the thoroughly refereed post-workshop proceedings of the 4th International Workshop on Modelling and Simulation for Autonomous Systems, MESAS 2017, held in Rome, Italy, in October 2017. The 33 revised full papers included in the volume were carefully reviewed and selected from 38 submissions. They are organized in the following topical sections: M&S of Intelligent Systems – AI, R&D and Applications; Autonomous Systems in Context of Future Warfare and Security – Concepts, Applications, Standards and Legislation; Future Challenges and Opportunities of Advanced M&S Technology.

To advantageously plan and design for the explosive near-future increase in the number of unmanned aerial vehicles (UAVs) and their demanding applications, integration of UAVs into cellular communication systems has seen increasing interest. This book provides a timely and comprehensive overview of the recent research efforts and results of unmanned aerial vehicles (UAVs)-integrated cellular network communications. The aim of the book is to provide a comprehensive coverage of the potential applications, networking architectures, latest research findings and key enabling technologies, experimental measurement results, as well as up-to-date industry standards for UAV communications in cellular systems, including the existing LTE as well as the future 5G-and-beyond systems.

Newcom traces the family tree of unmanned aircraft all the way back to their roots as aerial torpedoes, which were the equivalent of today's cruise missiles. He discusses the work of leading aerospace pioneers whose efforts in the area of unmanned aviation have largely been ignored by history.

Unmanned Vehicle Systems & Operations On Air, Sea, Land is our fourth textbook in a series covering the world of Unmanned Aircraft Systems (UAS) and Counter Unmanned Aircraft Systems (CUAS). (Nichols R. K., 2018) (Nichols R. K., et al., 2019) (Nichols R., et al., 2020) The authors have expanded their purview beyond UAS / CUAS systems. Our title shows our concern for growth and unique cyber security unmanned vehicle technology and operations for unmanned vehicles in all theaters: Air, Sea and Land - especially maritime cybersecurity and China proliferation issues. Topics include: Information Advances, Remote ID, and Extreme Persistence ISR; Unmanned Aerial Vehicles & How They Can Augment Mesonet Weather Tower Data Collection; Tour de Drones for the Discerning Palate; Underwater Autonomous Navigation & other UUV Advances; Autonomous Maritime Asymmetric Systems; UAV Integrated Autonomous Missions & Drone Management; Principles of Naval Architecture Applied to UUV's; Unmanned Logistics Operating Safely and Efficiently Across Multiple Domains; Chinese Advances in Stealth UAV Penetration Path Planning in Combat Environment; UAS, the Fourth Amendment and Privacy; UV & Disinformation / Misinformation Channels; Chinese UAS Proliferation along New Silk Road Sea / Land Routes; Automaton, AI, Law, Ethics, Crossing the Machine - Human Barrier and Maritime Cybersecurity.Unmanned Vehicle Systems are an integral part of the US national critical infrastructure The authors have endeavored to bring a breadth and quality of information to the reader that is unparalleled in the unclassified sphere. Unmanned Vehicle (UV) Systems & Operations On Air, Sea, Land discusses state-of-the-art technology issues facing U.S. UV system researchers / designers / manufacturers / testers. We trust our newest look at Unmanned Vehicles in Air, Sea, and Land will enrich our students and readers understanding of the purview of this wonderful technology we call UAV. The global spread of science and technology expenditure and the growing commercial access to advanced technologies with possible military applications is creating potentially serious threats to the technological superiority underpinning U.S. military strength. Key to dealing with this situation is the ability of the U.S. intelligence community to be able to provide adequate and effective warning of evolving, critical technologies. To assist in performing this task, the Technology Warning Division of the Defense Intelligence Agency (DIA) asked the National Research Council (NRC) to undertake a study examining technology warning issues. This report provides the first part of that study. It presents an assessment of critical, evolving technologies; postulates ways potential adversaries could disrupt these technologies; and provides indicators for the intelligence community to determine if such methods are under development. The intention of this report is to establish the foundation for a long-term relationship with the technology warning community to support the examination of technology warning issues.

What does it mean for human beings to exist in an era of dronefied state violence? How can we understand the rise of robotic systems of power and domination? Focusing on U.S. drone warfare and its broader implications as no other book has to date, Predator Empire argues that we are witnessing a transition from a labor-intensive “American empire” to a machine-intensive “Predator Empire.” Moving
from the Vietnam War to the War on Terror and beyond, Ian G. R. Shaw reveals how changes in military strategy, domestic policing, and state surveillance have come together to enclose our planet in a robotic system of control. The rise of drones presents a series of "existential crises," he suggests, that are reengineering not only spaces of violence but also the character of the modern state. Positioning drone warfare as part of a much longer project to watch and enclose the human species, he shows that for decades—centuries even—human existence has slowly but surely been brought within the artificial worlds of "technological civilization." Instead of incapacitating us in prisons or colonizing territory directly, the Predator Empire locks us inside a worldwide system of electromagnetic enclosure—in which democratic ideals give way to a system of totalitarian control, a machinic "rule by Nobody." As accessibly written as it is theoretically ambitious, Predator Empire provides up-to-date information about U.S. drone warfare, as well as an in-depth history of the rise of drones.

Radar Expert, Esteemed Author Gregory L. Charvat on CNN and CBSAuthor Gregory L. Charvat appeared on CNN on March 17, 2014 to discuss whether Malaysia Airlines Flight 370 might have literally flown below the radar. He appeared again on CNN on March 20, 2014 to explain the basics of radar, and he explored the hope and limitations of the technology i

Explore foundational and advanced issues in UAV communications with this cutting-edge and timely new resource UAV Communications for 5G and Beyond delivers a comprehensive overview of the potential applications, networking architectures, research findings, enabling technologies, experimental measurement results, and industry standardizations for UAV communications in cellular systems. The book covers both existing LTE infrastructure, as well as future 5G-and-beyond systems. UAV Communications covers a range of topics that will be of interest to students and professionals alike. Issues of UAV detection and identification are discussed, as is the positioning of autonomous aerial vehicles. More fundamental subjects, like the necessary tradeoffs involved in UAV communication are examined in detail. The distinguished editors offer readers an opportunity to improve their ability to plan and design for the near-future, explosive growth in the number of UAVs, as well as the correspondingly demanding systems that come with them. Readers will learn about a wide variety of timely and practical UAV topics, like: Performance measurement for aerial vehicles over cellular networks, particularly with respect to existing drones, MIMO and NOMA Multiple-Input Multiple-Output (MIMO) for Cellular UAV communications; channel modeling and interference, challenges Trajectory optimization for UAV communications Perfect for professional engineers and researchers working in the field of unmanned aerial vehicles, UAV Communications for 5G and Beyond also belongs on the bookshelves of students in masters and PhD programs studying the integration of UAVs into cellular communication systems.

Unmanned Aircraft Systems are an integral part of the US national critical infrastructure. The authors have endeavored to bring a breadth and quality of information to the reader that is unparalleled in the unclassified sphere. This textbook will fully immerse and engage the reader / student in the cyber-security considerations of this rapidly emerging technology that we know as unmanned aircraft systems (UAS). The first edition topics covered National Airspace (NAS) policy issues, information security (INFOSEC), UAS vulnerabilities in key systems (Sense and Avoid / SCADA), navigation and collision avoidance systems, stealth design, intelligence, surveillance and reconnaissance (ISR) platforms; weapons systems security; electronic warfare considerations; data-links, jamming, operational vulnerabilities and still-emerging political scenarios that affect US military / commercial decisions.This second edition discusses state-of-the-art technology issues facing US UAS designers. It focuses on counter unmanned aircraft systems (C-UAS) - especially research designed to mitigate and terminate threats by SWARMS. Topics include high-altitude platforms (HAPS) for wireless communications; C-UAS and large scale threats; acoustic countermeasures against SWARMS and building an Identify Friend or Foe (IFF) acoustic library; updates to the legal / regulatory landscape; UAS proliferation along the Chinese New Silk Road Sea / Land routes; and ethics in this new age of autonomous systems and artificial intelligence (AI).

This comprehensive resource explains the development of UAVs, drone threats, counter-UAV systems, and strategies to handle UAVs, focusing on the practical aspects of counter-unmanned aerial vehicle (UAV) systems and technologies. Theory, technical and operational practice with insights from industry and policing are covered, and the full rogue drone threat landscape and counter-drone technologies and systems is explored. The book provides insight into counter-drone strategy, developing effective counter-drone strategies and measures, as well as counter-drone programs and the regulatory frameworks governing the use of drones. It includes analysis of future drone and counter-drone challenges and highlights ongoing research and innovation activities and an examination of future drone technologies. Written by authors who have extensive academic, research, innovation, technical, industry and police operational investigative expertise at international level, this book is useful for the aviation sector, law enforcement and academia.

The U.S. Army's Future Combat Systems program aimed to field an ambitious system of systems, with novel technologies integrated via an advanced wireless network. The largest and most ambitious planned acquisition program in the Army's history, it was cancelled in 2009, and some of its efforts transitioned to follow-on programs. This report documents the program's complex history and draws lessons from its experiences. Despite the vital importance of the emerging area of biotechnology and its role in defense planning and policymaking, no definitive book has been written on the topic for the defense policymaker, the military student, and the private-sector bioscientist interested in the "emerging opportunities market" of national security. This edited volume is intended to help close this gap and provide the necessary backdrop for thinking strategically about biology in defense planning and policymaking. This volume is about applications of the biological sciences, here called "biologically inspired innovations," to the military. Rather than treating biology as a series of threats to be dealt with, such innovations generally approach the biological sciences as a set of opportunities for the military to gain strategic advantage over adversaries. These opportunities range from looking at everything from genes to brains, from enhancing human performance to creating renewable energy, from sensing the environment around us to harnessing its power. This book concentrates on the processing and application of radar micro-Doppler signatures in real world situations, providing readers with a good working knowledge on a variety of applications of radar micro-Doppler signatures. Topics covered include: bistatic/radome micro-Doppler signatures; decomposition of micro-Doppler signatures; complex-valued radar micro-Doppler signatures and ultrasonic micro-Doppler signature studies. Real world applications discussed include: detection, tracking and discrimination of targets with movements; analysis and identifying human movement; analysis and identifying智能 helicopters; detection and tracking small boats in sea; analysis of wind turbines. -- What does the Department of Defense hope to gain from the use of autonomous weapon systems (AWS)? This Letor Paper explores a diverse set of complex issues related to the developmental, operational, legal, and ethical aspects of AWS. It explores the recent history of the development and integration of autonomous and semi-autonomous systems into traditional military operations. It examines anticipated expansion of these roles in the near future as well as outlines international efforts to provide a context for the use of the systems by the United States. As these topics are well-documented in many sources, this Paper serves as a primer for current and future AWS operations to provide senior policymakers, decisionmakers, military leaders, and their respective staffs an overall appreciation of existing capabilities and the challenges, opportunities, and risks associated with the use of AWS across the range of military operations. Emphasis is added to missions and systems that include the use of deadly force. AUDIENCE: This paper serves as a primer for current and future autonomous weapon system (AWS) operations to provide senior policymakers, decision-makers, military leaders and their
respective staffs an overall appreciation for existing capabilities and the challenges, opportunities, and risks associated with AWS across the range of military operations. Emphasis is added to missions that include the use of deadly force. Additionally defense contractors and technology manufacturers may be interested in this work. Related products: Arms Control History collection is available here: https://bookstore.gpo.gov/catalog/us-military-history/arms-control-history Arms & Weapons resources collection can be found here: https://bookstore.gpo.gov/catalog/security-defense-law-enforcement/arms-weapons

Autonomous vehicles (AVs) have been used in military operations for more than 60 years, with torpedoes, cruise missiles, satellites, and target drones being early examples. They have also been widely used in the civilian sector—for example, in the disposal of explosives, for work and measurement in radioactive environments, by various offshore industries for both creating and maintaining undersea facilities, for atmospheric and underwater research, and by industry in automated and robotic manufacturing. Recent military experiences with AVs have consistently demonstrated their value in a wide range of missions, and anticipated developments of AVs hold promise for increasingly significant roles in future naval operations. Advances in AV capabilities are enabled (and limited) by progress in the technologies of computing and robotics, navigation, communications and networking, power sources and propulsion, and materials. Autonomous Vehicles in Support of Naval Operations is a forward-looking discussion of the naval operational environment and vision for the Navy and Marine Corps and of naval mission needs and potential applications and limitations of AVs. This report considers the potential of AVs for naval operations, operational needs and technology issues, and opportunities for improved operations.

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