The Use Of Unmanned Aerial Systems Drones Small Unmanned

This book tackles the regulatory issues of Unmanned Aerial Systems (UAS) or Remotely-Piloted Aerial Systems (RPAS), which have profound consequences for privacy, security and other fundamental liberties. Collectively known as "drones," they were initially deployed for military purposes: reconnaissance, surveillance and extrajudicial executions. Today, we are witnessing a growth of their use into the civilian and humanitarian domain. They are increasingly used for goals as diverse as news gathering, aerial inspection of oil refinery flare stacks, mapping of the Amazonian rain-forest, crop spraying and search and rescue operations. The civil use of drones is becoming a reality in the European Union and in the US.The drone revolution may be a new technological revolution. Proliferation of the next generation of "recreational" drones show how drones will be sold as any other consumer item. The cultural perception of the technology is shifting, as drones are increasingly being used for humanitarian activities, on one hand, but they can also firmly be situated in the prevailing modes of postmodern governance on the other hand. This work will be of interest to researchers in Criminology and Criminal Justice interested in issues related to surveillance, security, privacy, and technology. It will also provide a criminological background for related legal issues, such as privacy law, aviation law, international criminal law, and comparative law.

Newcome traces the family tree of unmanned aircraft all the way back to their roots as aerial torpedoes, which were the equivalent of todays 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 Aerial Vehicles in Civilian Logistics and Supply Chain ManagementIGI Global

This edited volume, Autonomous Vehicles, is a collection of reviewed and relevant research chapters, offering a comprehensive overview of recent developments in the field of vehicle autonomy. The book comprises nine chapters authored by various researchers and edited by an expert active in the field of study. All chapters are complete in itself but united under a common research study topic. This publication aims to provide a thorough overview of the latest research efforts by international authors, open new possible research paths for further novel developments, and to inspire the younger generations into pursuing relevant academic studies and professional careers within the autonomous vehicle field.

Unmanned aerial vehicles (UAVs) are being increasingly used in different applications in both military and civilian domains. These applications include surveillance, reconnaissance, remote sensing, target acquisition, border patrol, infrastructure monitoring, aerial imaging, industrial inspection, and emergency medical aid. Vehicles that can be considered autonomous must be able to make decisions and react to events without direct intervention by humans. Although some UAVs are able to perform increasingly complex autonomous manoeuvres, most UAVs are not fully autonomous; instead, they are mostly operated remotely by humans. To make UAVs fully autonomous, many technological and algorithmic developments are still required. For instance, UAVs will need to improve their sensing of obstacles and subsequent avoidance. This becomes particularly important as autonomous UAVs start to operate in civilian airspaces that are occupied by other aircraft. The aim of this volume is to bring together the work of leading researchers and practitioners in the field of unmanned aerial vehicles with a common interest in their autonomy. The contributions that are part of this volume present key challenges associated with the autonomous control of unmanned aerial vehicles, and propose solution methodologies to address such challenges, analyse the proposed methodologies, and evaluate their performance.

First used in military applications, unmanned aerial vehicles are becoming an integral aspect of modern society and are expanding into the commercial, scientific, recreational, agricultural, and surveillance sectors. With the increasing use of these drones by government officials, business professionals, and civilians, more research is needed to understand their complexity both in design and function. Unmanned Aerial Vehicles: Breakthroughs in Research and Practice is a critical source of academic knowledge on the design, construction, and maintenance of drones, as well as their applications across all aspects of society. Highlighting a range of pertinent topics such as intelligent systems, artificial intelligence, and situation awareness, this publication is an ideal reference source for military consultants, military personnel, business professionals, operation managers, surveillance companies, agriculturalists, policymakers, government officials, law enforcement, IT professionals, academicians, researchers, and graduate-level students.

The 15 chapters in this book explore the theoretical as well as a number of technical research outcomes on all aspects of UAVs. UAVs has 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.

Drones and Journalism explores the increased use of unmanned aerial vehicles, or drones, by the global media for researching and newsgathering purposes. Phil Chamberlains examines the technological development and capabilities of contemporary drone hardware, whilst also exploring the use of drones in investigative reporting, in the reporting of humanitarian crisis, and the use of this new technology in more mainstream media practices. The book also analyses the complex place of the media's drone use in relation to international laws, as well as the ethical challenges and issues raised by the practice.

Combat drones are transforming attitudes about the use of military force. Military casualties and the costs of conflict sap public support for war and for political and military leaders. Combat drones offer an unprecedented ability to reduce these costs by increasing accuracy, reducing the risks to civilians, and protecting military personnel from harm. These advantages should make drone strikes more popular than operations involving ground troops. Yet many critics believe drone warfare will make political leaders too willing to authorize wars, weakening constraints on the use of force. Because combat drones are relatively new, these arguments have been based on anecdotes, a handful of public opinion polls, or theoretical speculation. Drones and Support for the Use of Force uses experimental research to analyze the effects of combat drones on Americans' support for the use of force. The authors' findings—that drones have had important but nuanced effects on support for the use of force—have implications for democratic control of military action and civil-military relations and provide insight into how the proliferation of military technologies influences foreign policy. An unmanned aerial vehicle, commonly known as a drone, is an aircraft without a human pilot on board. Its flight is either controlled autonomously by computers in the vehicle, or under the remote control of a navigator or pilot on the ground or in another vehicle. Drone Warfare is one of the first books to examine the development and use of such aerial drones. Drones have been much maligned in the media and popular culture and there has been much controversy over their deployment. This book reveals the history of unmanned aircraft, their recent development, and why they have emerged onto the scene, setting the record straight about drones and their use. Drone Warfare answers questions such as: Why

did the United States invest so highly drone technology? When did all that start? What barriers had to be overcome? What was there before drones arrived? What roles did drones play in Iraq and Afghanistan? Were they successful? What new developments emerged during operations? Did they save lives? How many have been shot down and where? Will all air forces be drone based in the future? What other applications may arise in the civilian market? In a timely publication, Drone Warfare sets the record straight on unmanned aerial vehicles and explores technology and usage around the globe. Skyhorse Publishing, as well as our Arcade imprint, are proud to publish a broad range of books for readers interested in history--books about World War II, the Third Reich, Hitler and his henchmen, the JFK assassination, conspiracies, the American Civil War, the American Revolution, gladiators, Vikings, ancient Rome, medieval times, the old West, and much more. While not every title we publish becomes a New York Times bestseller or a national bestseller, we are committed to books on subjects that are sometimes overlooked and to authors whose work might not otherwise find a home.

Advances in high spatial resolution mapping capabilities and the new rules established by the Federal Aviation Administration in the United States for the operation of Small Unmanned Aircraft Systems (sUAS) have provided new opportunities to acquire aerial data at a lower cost and more safely versus other methods. A similar opening of the skies for sUAS applications is being allowed in countries across the world. Also, sUAS can access hazardous or inaccessible areas during disaster events and provide rapid response when needed. Applications of Small Unmanned Aircraft systems: Best Practices and Case Studies is the first book that brings together the best practices of sUAS applied to a broad range of issues in high spatial resolution mapping projects. Very few sUAS pilots have the knowledge of how the collected imagery is processed into value added mapping products that have commercial and/or academic import. Since the field of sUAS applications is just a few years old, this book covers the need for a compendium of case studies to guide the planning, data collection, and most importantly data processing and map error issues, with the range of sensors available to the user community. Written by experienced academics and professionals, this book serves as a guide on how to formulate sUAS based projects, from choice of a sUAS, flight planning for a particular application, sensors and data acquisition, data processing software, mapping software and use of the high spatial resolution maps produced for particular types of geospatial modeling. Features: Focus on sUAS based data acquisition and processing into map products Broad range of case studies by highly experienced academics Practical guidance on sUAS hardware, sensors, and software utilized Compilation of workflow insights from expert professors and professionals Relevant to academia, government, and industry Positional and thematic map accuracy, UAS curriculum development and workflow replicability issues This book would be an excellent text for upper-level undergraduate to graduate level sUAS mapping application courses. It is also invaluable as a reference for educators designing sUAS based curriculum as well as for potential sUAS users to assess the scope of mapping projects that can be done with this technology.

This title explores the development and use of unmanned aerial vehicles, or remotely piloted aircraft, more commonly known as drones. Readers will follow the history of the origins and development of the incredible military technology behind UAVs such as the Predator Drone, the Wasp Micro-Air Vehicle, the Global Hawk unmanned aerial vehicle, the hand-launched remote control RQ-11 Raven for field troops, and the long-endurance hunter-killer MQ-9 Reaper. Chapters detail their military and performance specifications as well as their features and advantages in the field (including their cameras, sensors, control systems, and weapons) and their pilots (often sitting on the other side of the world). Readers will also learn about their use in significant combat and surveillance missions throughout the Middle East and in other countries. Includes spec boxes and other text features. Aligned to Common Core Standards and correlated to state standards. A&D Xtreme is an imprint of Abdo Publishing, a division of ABDO.

Terrorism: Commentary on Security Documents is a series that provides primary source documents and expert commentary on various topics relating to the worldwide effort to combat terrorism. Among the documents collected are transcripts of Congressional testimony, reports by such federal government bodies as the Congressional Research Service (CRS) and the Government Accountability Office (GAO), United Nations Security Council resolutions, reports and investigations by the United Nations Secretary-General and other dedicated UN bodies, and case law from the U.S. and around the globe covering issues related to terrorism. Most volumes focus on a single theme, and inside each volume the documents usually appear within topic-based categories. The series also includes a subject index and other indices that guide the user through this complex area of the law. Volume 134, The Domestic Use of Unmanned Aerial Vehicles, examines an issue that is just now beginning to emerge as a subject of public debate, as the implications of new technological capabilities begin to become clear and the legal limits of the uses of those technologies begin to be tested. Professor Douglas C. Lovelace, Jr., who has provided the introductory commentary to this volume, has selected several illuminating documents that examine various aspects of this issue. These documents consider the expanding use of unmanned aerial vehicles (or drones) for surveillance activities by both border enforcement and domestic law enforcement officials; the privacy implications of the potentially highly intrusive surveillance capabilities of drone technology; and concerns that drones will be used for non-surveillance purposes within U.S. borders. Other topics include the state of the unmanned aircraft manufacturing sector in the U.S., the legal implications of the integration of drones into domestic airspace, and the constitutional implications of the expanding use of facial recognition technology.

Drones are found in the airspace throughout the world and are more popular now than ever before. We see them in the newspaper, on the TV, in films, at sporting events, and soon, they might be delivering our shopping. One of the most significant developments in contemporary warfare is the use of unmanned aerial vehicles (UAVs) or drones as they are more commonly known. Drones can fly autonomously or be controlled by remote control – their deployment is transforming the way wars are fought across the globe. Drones are not only used for fighting wars but for a wide-range of daily tasks such as photography, mapping, policing, delivery, search and rescue, meteorology and many more. Drones

explores the history behind unmanned aircraft, it explains how they work and features the most well-known military and civilian drones in action today. From the armed and deadly MQ-9 Reaper, the long endurance RQ-4 Global Hawk to the small hand-launched Cropcam and the Remus autonomous underwater vehicle. Illustrated with 200 colour photographs and artworks, Drones is an exciting, accessibly written narrative about the latest in military and civilian aviation technology.

Unmanned Aircraft Systems (UAS) are a rapidly evolving technology with an expanding array of diverse applications. In response to the continuing evolution of this technology, this book discusses unmanned aerial vehicles (UAVs) and similar systems, platforms and sensors, as well as exploring some of their environmental applications. It explains how they can be used for mapping, monitoring, and modeling a wide variety of different environmental aspects, and at the same time addresses some of the current constraints placed on realizing the potential use of the technology such as s flight duration and distance, safety, and the invasion of privacy etc. Features of the book: Provides necessary theoretical foundations for pertinent subject matter areas Introduces the role and value of UAVs for geographical data acquisition, and the ways to acquire and process the data Provides a synthesis of ongoing research and a focus on the use of technology for small-scale image and spatial data acquisition in an environmental context Written by experts of the technology who bring together UAS tools and resources for the environmental specialist Unmanned Aerial Remote Sensing: UAS for Environmental Applications is an excellent resource for any practitioner utilizing remote sensing and other geospatial technologies for environmental applications, such as conservation, research, and planning. Students and academics in information science, environment and natural resources, geosciences, and geography, will likewise find this comprehensive book a useful and informative resource.

The Drone Debate offers a thorough investigation of the where, why, how, and when of the U.S.'s use of UAVs. Beginning with a historical overview of the use of drones in warfare, it then addresses whether targeted killing operations are strategically wise, whether they are permissible under international law, and the related ethical issues. It also looks at the political factors behind the use of drones, including domestic and global attitudes toward their use and potential issues of proliferation and escalation. Finally, the use of drones by other countries, such as Israel and China, is examined. Each chapter features a case study that highlights particular incidents and patterns of operation in specific regions, including Yemen, Somalia, Pakistan, and Libya and strike types (signature strikes, personality strikes, etc.).

Introduction to Unmanned Aircraft Systems surveys the fundamentals of unmanned aircraft system (UAS) operations, from sensors, controls, and automation to regulations, safety procedures, and human factors. It is designed for the student or layperson and thus assumes no prior knowledge of UASs, engineering, or aeronautics. Dynamic and well-illustrated, the first edition of this popular primer was created in response to a need for a suitable university-level textbook on the subject. Fully updated and significantly expanded, this new Second Edition: Reflects the proliferation of technological capability, miniaturization, and demand for aerial intelligence in a post-9/11 world Presents the latest major commercial uses of UASs and unmanned aerial vehicles (UAVs) Enhances its coverage with greater depth and support for more advanced coursework Provides material appropriate for introductory UAS coursework in both aviation and aerospace engineering programs Introduction to Unmanned Aircraft Systems, Second Edition capitalizes on the expertise of contributing authors to instill a practical, up-to-date understanding of what it takes to safely operate UASs in the National Airspace System (NAS). Complete with end-of-chapter discussion questions, this book makes an ideal textbook for a first course in UAS operations.

Multi-rotor Platform Based UAV Systems provides an excellent opportunity for experiential learning, capability augmentation and confidence-building for senior level undergraduates, entry-level graduates, engineers working in government agencies, and industry involved in UAV R&D. Topics in this book include an introduction to VTOL multi-copter UAV platforms, UAV system architecture, integration in the national airspace, including UAV classification and associated missions, regulation and safety, certification and air traffic management, integrated mission planning, including autonomous fault tolerant path planning and vision based auto landing systems, flight mechanics and stability, dynamic modeling and flight controller development. Other topics covered include sense, detect and avoid systems, flight testing, including safety assessment instrumentation and data acquisition telemetry, synchronization data fusion, the geo-location of identified targets, and much more. Provides an excellent opportunity for experiential learning, capability augmentation and confidence building for senior level undergraduates, entry-level graduates and engineers working in government, and industry involved in UAV R&D Includes MATLAB/SIMULINK computational tools and off-the-shelf hardware implementation tutorials Offers a student centered approach Provides a quick and efficient means to conceptualize, design, synthesize and analyze using modeling and simulations Offers international perspective and appeal for engineering students and professionals

The use of unmanned aerial vehicles (UAVs) plays an important role in supporting human activities. Man is concentrating more and more on intellectual work, and trying to automate practical activities as much as possible in order to increase their efficiency. In this regard, the use of drones is increasingly becoming a key aspect of this automation process, offering many advantages, including agility, efficiency and reduced risk, especially in dangerous missions. Hence, this Special Issue focuses on applications, platforms and services where UAVs can be used as facilitators for the task at hand, also keeping in mind that security should be addressed from its different perspectives, ranking from communications security to operational security, and furthermore considering privacy issues.

Unmanned Aerial Systems: Theoretical Foundation and Applications presents some of the latest innovative approaches to drones from the point-of-view of dynamic modeling, system analysis, optimization, control, communications, 3D-mapping, search and rescue, surveillance, farmland and construction monitoring, and more. With the emergence of low-cost UAS, a vast array of research works in academia and products in the industrial sectors have evolved. The book

covers the safe operation of UAS, including, but not limited to, fundamental design, mission and path planning, control theory, computer vision, artificial intelligence, applications requirements, and more. This book provides a unique reference of the state-of-the-art research and development of unmanned aerial systems, making it an essential resource for researchers, instructors and practitioners. Covers some of the most innovative approaches to drones Provides the latest state-of-the-art research and development surrounding unmanned aerial systems Presents a comprehensive reference on unmanned aerial systems, with a focus on cutting-edge technologies and recent research trends in the area The public debate over civilian use of drones is intensifying. Variously called "unmanned aircraft systems", "unmanned aerial vehicles", "remotely piloted aircraft", or simply "drones", they are available for purchase by anyone for a few hundred to a few thousand dollars. They have strikingly useful capabilities. They can carry high-definition video cameras, infrared imaging equipment, sensors for aerial surveying and mapping. They can stream their video in real time. They have GPS, inertial guidance, magnetic compasses, altimeters, and sonic ground sensors that permit them to fly a preprogrammed flightplan, take off and land autonomously, hover and orbit autonomously with the flick of a switch on the DRone Operator's ("DROPs") console. The benefits they can confer on law enforcement, journalism, land-use planning, real estate sales, critical infrastructure protection and environmental preservation activities are obvious. However, their proliferation in response to these demands will present substantial risks to aviation safety. How to ensure the safety of drone operations perplexes aviation regulators around the world. They are inexpensive consumer products, unsuited for traditional requirements for manned aircraft costing hundreds of thousands or millions of dollars and flown only by licensed pilots who have dedicated significant parts of their lives and their wealth to obtaining licenses. Regulatory agencies in Europe and Asia are ahead of US regulators in creating spaces for commercial use. Over the next several years, legal requirements must be crystallized, existing operators of helicopter and airplanes must refine their policy positions and their business plans to take the new technologies into account, and all businesses from the smallest entrepreneur to large conglomerates must decide whether and how to use them. Domesticating Drones offers rigorous engineering, economics, legal and policy theory and doctrine on this important and far-reaching development within aviation.

Many industries have begun to recognize the potential support that unmanned aerial vehicles (UAVs) offer, and this is no less true for the commercial sector. Current research on this field is narrowly focused on technological development to improve the functionality of delivery and endurance of the drone delivery in logistics, as well as on regulatory challenges posed by such operations. There is a need for further attention to be applied to operational and integration challenges associated with UAVs. Unmanned Aerial Vehicles in Civilian Logistics and Supply Chain Management is a collection of innovative research that investigates the opportunities and challenges for the use of UAVs in logistics and supply chain management with a specific aim to focus on the multifaceted impact of drone delivery. While highlighting topics including non-military operations, public management, and safety culture, this book is ideally designed for government administrators, managers, industry professionals, researchers, and students.

In the Long War, formerly called the Global War on Terror, the armed forces of the United States have utilized unmanned aerial vehicles (UAVs) extensively to support combat, security, and stability operations. The concept of unmanned flight is nothing new to the military. Experiments with pilotless aircraft began at the end of World War I. The historical development of these aircraft and the Army's long use of aerial platforms for reconnaissance provide valuable insight into the future possibilities and potential pitfalls of UAVs.Mr. John Blom's study describes the way that aircraft have been integrated into ground units since World War I. Mr. Blom traces this integration through World War II and the creation of an independent Air Force. In the ninety years since World War I, the quantity of aircraft organic to ground units has constantly expanded. In this period, many of the same debates between the Army and Air Force that continue today over UAVs first appeared.This study addresses past and current systems, and does not address systems under development. The technological development of UAVs possesses as deep a history as the Army's use of aircraft for aerial reconnaissance. Mr. Blom details the long development of UAVs that has led the military to where it is today. Understanding this past may provide clues into where this technology may be going, and what problems could lie ahead.

Drones in Smart-Cities: Security and Performance is the first book dedicated to drones in smart cities, helping address the many research challenges in bringing UAVs into practice. The book incorporates insights from the latest research in Internet of Things, big data, and cloud computing, 5G, and other communication technologies. It examines the design and implementation of UAV, focusing on data delivery, performability, and security. Intended for researchers, engineers, and practitioners, Drones in Smart-Cities: Security and Performance combines the technical aspects with academic theory to help implement the smart city vision around the globe. Addresses UAV and IoT for smart cities applications Examines topics as UAV safety, challenges, localization methods. QoS, simulation tools, and more Collect the relevant knowledge in one resource, saving research time and effort

This book provides an introduction to the use of unmanned aerial vehicles (UAVs) for the geographic observation and spatial analysis of urban areas. The velocity of urban change necessitates observation platforms that not only enhance situational awareness for planning and allied analytical efforts, but also provide the ability to rapidly and inexpensively collect data and monitor change. UAVs can accomplish both of these tasks, but their use in urban environments is loaded with social, operational, regulatory and technical challenges that must be addressed for successful deployments. The book provides a resource for educators and students who work with geographic information and are seeking to enhance these data with the use of unmanned aerial vehicles. Topics covered include, 1) a primer on UAVs and the many different ways they can be used for geographic observation, 2) a detailed overview on the use of aviation maps and charts for operating UAVs in complex urban airspace, 3) techniques for integrating UAV-derived data with more traditional geographic information, 4) application of spatial analytical tools for urban and environmental planning, and 5) an

exploration of privacy and public safety issues associated with UAV operation.

Over the past few decades, extensive research has been conducted on the applications of agricultural robots and automation to a variety of field and greenhouse operations, and technical fundamentals and their feasibility have also been widely demonstrated. Due to the unstructured environment, adverse interference and complicated and diversified operation process are the key of blocking its commercialization in robotic agricultural operations. Because of the development of automation techniques, smart sensors, and information techniques, some types of agricultural robots have achieved considerable success in recent years. This book intends to provide the reader with a comprehensive overview of the current state of the art in agricultural robots, fundamentals, and applications in robotic agricultural operations.

This book provides a complete overview of the theory, design, and applications of unmanned aerial vehicles. It covers the basics, including definitions, attributes, manned vs. unmanned, design considerations, life cycle costs, architecture, components, air vehicle, payload, communications, data link, and ground control stations. Chapters cover types and civilian roles, sensors and characteristics, alternative power, communications and data links, conceptual design, human machine interface, sense and avoid systems, civil airspace issues and integration efforts, navigation, autonomous control, swarming, and future capabilities.

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 book showcases how new and emerging technologies like Unmanned Aerial Vehicles (UAVs) are trying to provide solutions to unresolved socio-economic and environmental problems. Unmanned vehicles can be classified into five different types according to their operation. These five types are unmanned ground vehicles, unmanned aerial vehicles, unmanned surface vehicles (operating on the surface of the water), unmanned underwater vehicles, and unmanned spacecraft. Unmanned vehicles can be guided remotely or function as autonomous vehicles. The technology has a wide range of uses including agriculture, industry, transport, communication, surveillance and environment applications. UAVs are widely used in precision agriculture; from monitoring the crops to crop damage assessment. This book explains the different methods in which they are used, providing step-by-step image processing and sample data. It also discusses how smart UAVs will provide unique opportunities for manufacturers to utilise new technological trends to overcome the current challenges of UAV applications. The book will be of great interest to researchers engaged in forest carbon measurement, road patrolling, plantation monitoring, crop yield estimation, crop damage assessment, terrain modelling, fertilizer control, and pest control.

Few years ago, the topic of aerial robots was exclusively related to the robotics community, so a great number of books about the dynamics and control of aerial robots and UAVs have been written. As the control technology for UAVs advances, the great interaction that exists between other systems and elements that are as important as control such as aerodynamics, energy efficiency, acoustics, structural integrity, and applications, among others has become evident. Aerial Robots - Aerodynamics, Control, and Applications is an attempt to bring some of these topics related to UAVs together in just one book and to look at a selection of the most relevant problems of UAVs in a broader engineering perspective.

The growing popularity of unmanned aerial vehicles (UAVs), informally known as drones, opened new opportunities for geoscientists to monitor the Earth at unprecedented spatial and temporal resolutions. Geophysicists use UAVs to observe underground features, geologists and geomorphologists utilize drones to carry out detailed survey of Earth's surface, hydrologists apply UAVs to observe water bodies and conduct hydrometric measurements, and meteorologists use drones to measure weather characteristics and air quality. The articles presented in this topical issue of Pure and Applied Geophysics focus on the range of applications of UAVs in geosciences, forming a selection of case studies from different geographic regions. Two papers address the issue of investigating subsurface processes, including magnetic survey and post-explosion imprint on physical terrain. Three articles present examples of high-resolution mapping of landforms, ranging from a highly dynamic aeolian environment to stable granite tors. Water-related problems, covering fluvial geomorphologic and hydrographic studies with the use of UAVs, are solved in other three papers of this topical issue. A number of meteorological variables is investigated in four articles, including UAV-based snow characterization, atmospheric aerosol monitoring and cloudiness. Finally, this book includes two technical reports on both technological and historical aspects of the UAV-assisted research in geosciences. Since this volume of Pure and Applied Geophysics puts an emphasis on case studies on a diverse usage of drones in Earth sciences it may be interesting not only for researchers, but particularly for postgraduate students in geophysics, geology, geography or civil engineering. Practitioners may also find this topical issue useful for implementing the UAV survey as a tool for mitigating the risk of

selected geohazards.

The Chinese People's Liberation Army (PLA) continues to work diligently on all aspects of their aerospace forces. This includes areas not only of traditional aircraft, but also in more modern, and some cutting edge, technologies. The UAV is one area in which the People's Republic of China, and the PLA in specific, has invested significant time and effort. While we recognize that the term "unmanned" is the common and official term, it is rather misleading in the fact that humans, at least up until today, still play a critical role in their operations. Nonetheless, we will not buck convention at this moment, and continue to use "unmanned" for the 'U' in UAV, for this paper. The PRC is the world's largest producer of UAVs at this time, and captures a vast portion of the commercial market, as well as the military one. While it is important to keep the commercial aspects in mind, this particular paper will focus on military UAVs, their development, deployments, and current and potential uses on the battlefield of today and tomorrow. The paper seeks to serve as a starting point to understand this growing field, and to give analysts a common baseline from which to work, and from which to judge growth, both rapidity and complexity, in the future.

Discusses law protecting individual privacy interests from potential invasion by domestic use of unmanned aerial vehicles or drones.

Unmanned Aircraft Systems delivers a much needed introduction to UAV System technology, taking an integrated approach that avoids compartmentalising the subject. Arranged in four sections, parts 1-3 examine the way in which various engineering disciplines affect the design, development and deployment of UAS. The fourth section assesses the future challenges and opportunities of UAS. Technological innovation and increasingly diverse applications are two key drivers of the rapid expansion of UAS technology. The global defence budget for UAS procurement is expanding, and in the future the market for civilian UAVs is expected to outmatch that of the military. Agriculture, meteorology, conservation and border control are just a few of the diverse areas in which UAVs are making a significant impact; the author addresses all of these applications, looking at the roles and technology behind both fixed wing and rotorcraft UAVs. Leading aeronautical consultant Reg Austin co-founded the Bristol International Remotely Piloted Vehicle (RPV) conferences in 1979, which are now the longest-established UAS conferences worldwide. In addition, Austin has over 40 years' experience in the design and development of UAS. One of Austin's programmes, the "Sprite UAV System" has been deployed around the world and operated by day and night, in all weathers.

The first book to focus on communications and networking in UAVs, covering theory, applications, regulation, policy, and implementation.

Drone technologies have constantly been developing for over 100 years. The latest models exhibit a previously unseen set of specifications available to the end users. The collective effort of distinguished international researchers, within the field of drone technologies, has been incorporated into this textbook suitable to the broader audience. The book has been edited by Prof. George Dekoulis, Aerospace Engineering Institute (AEI), Cyprus, an expert on state-of-the-art implementations of reconfigurable space engineering systems. The book consists of four main sections, namely, "Introduction," "Drone History," "Drone Design," and "Drone Applications." We hope this book will be beneficial to professionals, researchers, and academicians and, moreover, to inspire the younger generations into pursuing relevant academic studies and professional careers within the drone industry.

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.1 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 undersea 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.

This book analyses the legal, ethical and social aspects of using deep-learning AI robotic products. The collective effort of distinguished international researchers has been incorporated into one book suitable for the broader audience interested in the emerging scientific field of roboethics. The book has been edited by Prof. George Dekoulis, Aerospace Engineering Institute, Cyprus, expert on state-of-the-art implementations of robotic systems for unmanned spacecraft navigation and other aerospace applications. We hope this book will increase the sensitivity of all the community members involved with roboethics. The significance of incorporating all aspects of roboethics right at the beginning of the creation of a new deep-learning AI robot is emphasised and analysed throughout the book. AI robotic systems offer an unprecedented set of virtues to the society. However, the principles of roboethical design and operation of deep-learning AI robots must be strictly legislated, the manufacturers should apply the laws and the knowledge development of the AI robots should be closely monitored after sales. This will minimise the drawbacks of implementing such intelligent technological solutions. These devices are a representation of ourselves and form communities like us. Learning from them is also a way to improve ourselves.