Geo-Spatial Knowledge and Intelligence

Although most mining companies have systems in place for slope monitoring, experience indicates that mining operations continue to be surprised by the occurrence of negative geotechnical events. A comprehensive and robust performance monitoring system is an essential component of the slope management program in an open pit mining operation. Yet the development of such a system requires considerable expertise to ensure that the monitoring system is effective and reliable. Written by industry experts, "Guidelines for Slope Performance Monitoring" is an initiative of the Large Open Pit (LOP) Project and the fifth book in the Guidelines for Open Pit Slope Design series. Its 10 chapters present the process of establishing and operating a slope monitoring system, the fundamentals of pit slope monitoring methods and instrumentation, monitoring system operation, data acquisition, management and analysis, and utilisation and communication of monitoring results. The implications of the increasing move to automate mining operations are also discussed, including the potential future requirements of performance monitoring. The book summarises leading mine industry practice in monitoring system design, implementation, system management, data management and reporting, providing guidance for engineers, geologists, technicians and others responsible for geotechnical risk management.

Decisions - Federal Mine Safety and Health Review Commission

This volume contains revised and extended research articles written by prominent researchers participating in the ICF4C 2011 conference. 2011 International Conference on Future Communication, Computing, Control and
M anagement (ICF 4C 2011) has been held on December 16-17, 2011, Phuket, Thailand. Topics covered include intelligent computing, network management, wireless networks, telecommunication, power engineering, control engineering, Signal and Image Processing, Machine Learning, Control Systems and Applications. The book will offer the states of arts of tremendous advances in Computing, Communication, Control, and Management and also serve as an excellent reference work for researchers and graduate students working on Computing, Communication, Control, and Management Research.

Emergency and Disaster Management: Concepts, Methodologies, Tools, and Applications A collection of symposium papers covering all major aspects of mining and related disciplines. Topics include: mining science; environmental and safety technology; mine control; automation and mechanization; mining geomechanics; mine construction and engineering; and coal processing.

Fiber Optic Sensors for Structural and Geotechnical Monitoring Volume is indexed by Thomson Reuters CPCI-S (WoS). This work on the topic of automatic manufacturing systems consists of 302 peer-reviewed papers. The papers are grouped into ten chapters: Virtual Manufacturing and Sustainable Manufacturing; Digital Manufacture and Quality Monitoring; Systems Analysis and Industrial Engineering; Supply Chain and E-Commerce Systems; Computer-Aided Manufacturing Engineering; Mechatronics; Transmission and Control of Fluid; Mechanical Control and Information Processing Technology; Micro-Electronic Packaging Technology and Equipment; Computer Application Technology.

Proceedings of the 2012 International Conference on Communication, Electronics and Automation Engineering

Mine Planning and Equipment Selection The papers in these two volumes were presented at the International Conference on "NexGen Technologies for Mining and Fuel Industries" [NxGnMiFu-2017] in New Delhi from February 15-17, 2017, organized by CSIR-Central Institute of Mining and Fuel Research, Dhanbad, India. The proceedings include the contributions from authors across the globe on the latest research on mining and fuel technologies. The major issues focused on are: Innovative Mining Technology, Rock Mechanics and Stability Analysis, Advances in Explosives and Blasting, Mine Safety and Risk Management, Computer Simulation and Mine Automation, Natural Resource Management for Sustainable Development, Environmental Impacts and Remediation, Paste Fill Technology and Waste Utilisation, Fly Ash Management, Clean Coal Initiatives, Mineral Processing and Coal Beneficiation, Quality Coal for Power Generation and Conventional and Non-conventional Fuels and Gases. This collection of contemporary articles contains unique knowledge, case studies, ideas and insights, a must-have for researchers and engineers working in the areas of mining technologies and fuel sciences.

Mine Planning and Equipment Selection 1995

Mine Planning and Equipment Selection 2004 Advances in Productive, Safe, and Responsible Coal Mining covers the latest advancements in coal mining technology and practices. It gives a comprehensive introduction to the latest research and technology developments, addressing problems and issues currently being faced, and is a valuable resource of compiled technical information on the latest coal mining safety and health research. A coal's staying power has been at the forefront of the world's energy mix for more than a century, this book explores critical issues affecting coal mining, including how to maintain low-cost productivity, address health and safety hazards, and how to be responsible environmental stewards. This book takes a holistic
approach in addressing each issue from the perspective of its impact on the coal mining operation and industry as a whole. Explains how to effectively produce coal within existing environmental constraints. Encapsulates the latest health and safety research and technological advances in the coal mining industry. Written by authors who have developed the latest technology for coal mines.

Improving Self-Escape from Underground Coal Mines: Sensing and Monitoring Technologies for Mines and Hazardous Areas. Monitoring and Prediction Technologies presents the fundamentals of mining related geotechnical risk and how the latest advances in sensing and data communication can be used both to prevent accidents and provide early warnings. Opencast mining operations involve huge quantities of overburden removal, dumping, and backfilling in excavated areas. Substantial increases in the rate of accumulation of waste dumps in recent years has resulted in greater height of dumps and also has given rise to the danger of dump failures as steeper open pit slopes are prone to failure. These failures lead to loss of valuable human lives and damage to mining machinery. This book presents the most recent advances in gas sensors, methane detectors, and power cut-off systems. It also introduces monitoring of the gas strata and environment, and an overview of the use of Internet of Things and cloud computing for mining sensing and surveillance purposes. Targeted at geotechnical and mining engineers, this volume covers the latest findings and technology to prevent mining accidents and mitigate the inherent risk of the activity. Presents complete details of a real-time slope stability monitoring system using wireless sensor networking and prediction technique based on multivariate statistical analysis of various parameters and analytical hierarchy process methods. Discusses innovative ideas and new concepts of sensing technologies, mine transport surveillance, digital mining, and cloud computing to improve safety and productivity in mining industry. Includes slope stability prediction software, downloadable through a companion website, which can be used for monitoring, analyzing, and storing different sensors and providing audio-visual, SMS, and email alerts. Covers the latest findings and technology to prevent mining accidents and mitigate the inherent risk.

Mining Safety and Health Research at NIOSH. This two-volume set (CCIS 848 and CCIS 849) constitutes the thoroughly refereed proceedings of the 5th International Conference Geo-Spatial Knowledge and Intelligence, GSKI 2017, held in Chiang Mai, Thailand, in December 2018. The 142 full papers presented were carefully reviewed and selected from 579 submissions. They are organized in topical sections on smart city in resource management and sustainable ecosystem; spatial data acquisition through RS and GIS in resource management and sustainable ecosystem; ecological and environmental data processing and management; advanced geospatial model and analysis for understanding ecological and environmental process; applications of geo-informatics in resource management and sustainable ecosystem.

Mine Health and Safety Contract Research, Development and Demonstration in Fiscal Year 1979. Coal remains one of the principal sources of energy for the United States, and the nation has been a world leader in coal production for more than 100 years. According to U.S. Energy Information Administration projections to 2050, coal is expected to be an important energy resource for the United States. Additionally, metallurgical coal used in steel production remains an important national commodity. However, coal production, like all other conventional mining activities, creates dust in the workplace. Respirable coal mine dust (RCMD) comprises the size fraction of airborne particles in underground mines that can be inhaled by miners and deposited in the distal airways and gas-exchange region of the lung. Occupational exposure to RCMD has long been associated with lung diseases common to the coal mining industry, including coal workers' pneumoconiosis, also known as "black lung disease." Monitoring and Sampling Approaches to Assess Underground Coal Mine Dust Exposures compares the monitoring technologies and sampling protocols currently used or required by the United States, and in similarly industrialized
countries for the control of RCM D exposure in underground coal mines. This report assesses the
effects of rock dust mixtures and their application on RCM D measurements, and the efficacy of
current monitoring technologies and sampling approaches. It also offers science-based conclusions
regarding optimal monitoring and sampling strategies to aid mine operators' decision making
related to reducing RCM D exposure to miners in underground coal mines.

Annual Research Report This two-volume set of CCIS 391 and CCIS 392 constitutes the refereed
proceedings of the Fourth International Conference on Information Computing and Applications,
ICICA 2013, held in Singapore, in August 2013. The 126 revised full papers presented in both
volumes were carefully reviewed and selected from 665 submissions. The papers are organized in
topical sections on Internet computing and applications; engineering management and
applications; intelligent computing and applications; control engineering and applications; cloud
and evolutionary computing; knowledge management and applications; computational statistics
and applications.

Computer Applications in the Mineral Industries Routine seismic monitoring in mines was
introduced over 30 years ago with two main objectives in mind: • immediate location of larger
seismIC events to guide rescue operations; • prediction of large rockmass instabilities. The first
objective was achieved fairly quickly, but with the subsequent development of mine
communication systems, its strategic importance has diminished. The very limited success with
prediction can, at least partially, be attributed to three factors: • seismic monitoring systems
based on analogue technology that provided noisy and, frequently, poorly calibrated data of
limited dynamic range; • the non-quantitative description of a seismic event by at best its local
magnitude; and • the resultant non-quantitative analysis of seismicity, frequently through
parameters of some statistical distributions, with a somewhat loose but imaginative physical
interpretation. The introduction of modern digital seismic systems to mines and progress in the
theory and methods of quantitative seismology have enabled the implementation of realtime
seismic monitoring as a management tool, quantifying rockmass response to mining and achieving
the first tangible results with prediction. A seismic event, being a sudden inelastic deformation
within the rockmass, can now routinely be quantified in terms of seismic moment, its tensor, and
radiated seismic energy, so that the overall size of, and stress released at, the seismic source can be
estimated.

Guidelines for Slope Performance Monitoring Coal mine disasters in the United States are
relatively rare events; many of the roughly 50,000 miners underground will never have to
evacuate a mine in an emergency during their careers. However, for those that do, the
consequences have the potential to be devastating. U.S. mine safety practices have received
increased attention in recent years because of the highly publicized coal mine disasters in 2006 and
2010. Investigations have centered on understanding both how to prevent or mitigate emergencies
and what capabilities are needed by miners to self-escape to a place of safety successfully. This
report focuses on the latter - the preparations for self-escape. In the wake of 2006 disasters, the
U.S. Congress passed the Mine Improvement and New Emergency Response Act of 2006 (MINER
Act), which was designed to strengthen existing mine safety regulations and set forth new
measures aimed at improving accident preparedness and emergency response in underground
coal mines. Since that time, the efforts of the National Institute of Occupational Safety and Health
(NIOSH) and the Mine Safety and Health Administration (MSHA) have contributed to safety
improvements in the mining industry. However, the Upper Big Branch mine explosion in 2010
served as a reminder to remain ever vigilant on improving the prevention of mine disasters and
preparations to help miners survive in the event of emergencies. This study was set in the context
of human-systems integration (HSI), a systems approach that examines the interaction of people,
tasks, and equipment and technology in the pursuit of a goal. It recognizes this interaction occurs within, and is influenced by, the broader environmental context. A key premise of human-systems integration is that much important information is lost when the various tasks within a system are considered individually or in isolation rather than in interaction with the whole system. Improving Self-Escape from Underground Coal Mines, the task of self-escape is part of the mine safety system.

NexGen Technologies for Mining and Fuel Industries (Volume I and II)

Sensing and Monitoring Technologies for Mines and Hazardous Areas This book is a collection of selected papers from the 2011 International Conference on Communications, Electronics and Automation Engineering held in Xi’an, China, August 23-25, 2012. It presents some of the latest research findings in a broad range of interdisciplinary fields related to communications, electronics and automation engineering. Specific emphasis is placed on the following topics: automation control, data mining and statistics, simulation and mathematical modeling, human factors and cognitive engineering, web technology, optimization and algorithm, and network communications. The prime objective of the book is to familiarize the readers with cutting edge developments in the research of electronics and automation engineering with a variety of applications. Hopefully, the book can help researchers to identify research trends in many areas, to learn the new methods and tools, and to spark innovative ideas.

Scientific and Practical Studies of Raw Material Issues The use of sensors based on fibre optic technology allows a broad range of applications in the fields of structural and geotechnical monitoring, which can effectively improve the maintenance of infrastructures and the safety of communities. Thanks to its valuable features, such as distributed monitoring, the easiness and endurance of cabling, long term stability, reliable responses in both static and dynamic regimes and fibre optic technology, innovative and efficient solutions to quite difficult monitoring problems have already been provided. The increasing worldwide attention to infrastructures and communities with resilience capabilities against natural disasters has opened up new and challenging perspectives of applications to the use of fibre optic technology for structural and geotechnical monitoring. This book collects contributions in the development and application of monitoring solutions, based on fibre optic technology for structural and geotechnical engineering works and issues. In the book preface, the content of the contributions is reviewed, pointing out the relevance of the work, with respect to the advance and spreading of fibre optic technology for monitoring applications. All contributions provide a comprehensive discussion and report a rich bibliography on the current trends and issues relative to the theme of the work presented.

Veterinary Clinical Pathology The U.S. mining sector has the highest fatality rate of any industry in the country. Fortunately, advances made over the past three decades in mining technology, equipment, processes, procedures, and workforce education and training have significantly improved safety and health. The National Institute for Occupational Safety and Health (NIOSH) Mining Safety and Health Research Program (Mining Program) has played a large role in these improvements. An assessment of the relevance and impact of NIOSH Mining Program research by a National Research Council committee reveals that the program makes essential contributions to the enhancement of health and safety in the mining industry. To further increase its effectiveness, the Mining Program should proactively identify workplace hazards and establish more challenging and innovative goals toward hazard reduction. The ability of the program to successfully expand its activities, however, depends on available funding.

International Mining Forum 2004, New Technologies in Underground Mining, Safety in Mines
2012 International Conference on Software Engineering, Knowledge Engineering and Information Engineering (SEKEIE 2012) will be held in Macau, April 1-2, 2012. This conference will bring researchers and experts from the three areas of Software Engineering, Knowledge Engineering and Information Engineering together to share their latest research results and ideas. This volume book covered significant recent developments in the Software Engineering, Knowledge Engineering and Information Engineering field, both theoretical and applied. We are glad this conference attracts your attentions, and thank your support to our conference. We will absorb remarkable suggestion, and make our conference more successful and perfect.

Software Engineering and Knowledge Engineering: Theory and Practice Veterinary Clinical Pathology: A Case-Based Approach presents 200 cases with questions for those interested in improving their skills in veterinary clinical pathology. It emphasises an understanding of basic pathophysiologic mechanisms of disease, differential diagnoses and recognition of patterns associated with various diseases or conditions. Topics discussed include haematology, clinical chemistry, endocrinology, acid-base and blood gas analysis, haemostasis, urinalysis, biological variation and quality control. Species covered include the cat, dog and horse, with additional material on ruminants. Cases vary in difficulty, allowing beginners to improve their clinicopathologic skills while more complicated cases, or cases treating unfamiliar topics, are included for experienced readers. This book is a helpful revision aid for those in training as well as for those in practice who are pursuing continuing education. It is also a valuable resource for veterinary nurses and technicians.

Annual Report of the Secretary of Labor Under the Federal Mine Safety and Health Act of 1977 This six-volume-set (CCIS 231, 232, 233, 234, 235, 236) constitutes the refereed proceedings of the International Conference on Computing, Information and Control, ICCIC 2011, held in Wuhan, China, in September 2011. The papers are organized in two volumes on Innovative Computing and Information (CCIS 231 and 232), two volumes on Computing and Intelligent Systems (CCIS 233 and 234), and in two volumes on Information and Management Engineering (CCIS 235 and 236).

Evolutionary and Revolutionary Technologies for Mining This text presents about 150 papers based on an international symposium on mine planning and equipment selection, held in Canada in 1995. Coverage includes: design and planning of surface and underground mines; surface mining and the environment; tailings disposal; and slope stability analysis.

Information Management and Machine Intelligence Although most mining companies utilise systems for slope monitoring, experience indicates that mining operations continue to be surprised by the occurrence of adverse geotechnical events. A comprehensive and robust performance monitoring system is an essential component of slope management in an open pit mining operation. The development of such a system requires considerable expertise to ensure the monitoring system is effective and reliable. Written by instrumentation experts and geotechnical practitioners, Guidelines for Slope Performance Monitoring is an initiative of the Large Open Pit (LOP) Project and the fifth book in the Guidelines for Open Pit Slope Design series. Its 10 chapters present the process of establishing and operating a slope monitoring system; the fundamentals of pit slope monitoring instrumentation and methods; monitoring system operation; data acquisition, management and analysis; and utilising and communicating monitoring results. The implications of increased automation of mining operations are also discussed, including the future requirements of performance monitoring. Guidelines for Slope Performance Monitoring summarises leading mine industry practice in monitoring system design, implementation, system management, data management and reporting, and provides guidance for engineers, geologists,
technicians and others responsible for geotechnical risk management.

Future Wireless Networks and Information Systems Coal will continue to provide a major portion of energy requirements in the United States for at least the next several decades. It is imperative that accurate information describing the amount, location, and quality of the coal resources and reserves be available to fulfill energy needs. It is also important that the United States extract its coal resources efficiently, safely, and in an environmentally responsible manner. A renewed focus on federal support for coal-related research, coordinated across agencies and with the active participation of the states and industrial sector, is a critical element for each of these requirements. Coal focuses on the research and development needs and priorities in the areas of coal resource and reserve assessments, coal mining and processing, transportation of coal and coal products, and coal utilization.

Intelligence Computation and Evolutionary Computation This edited volume includes all papers presented at the 22nd International Conference on Mine Planning and Equipment Selection (MPES), Dresden, Germany, 2013. Mineral Resources are needed for almost all processes of modern life, whilst the mining industry is facing strict requirements regarding efficiency and sustainability. The research papers in this volume deal with the latest developments and research results in the fields of mining, machinery, automatization and environment protection.


Seismic Monitoring in Mines This text covers the use of computer applications in the mineral industries, encompassing topics such as the use of computer visualization in mining systems and aspects such as ventilation and safety.

Uranium Mining in Virginia

Monitoring and Sampling Approaches to Assess Underground Coal Mine Dust Exposures Uranium mining in the Commonwealth of Virginia has been prohibited since 1982 by a state moratorium, although approval for restricted uranium exploration in the state was granted in 2007. Uranium Mining in Virginia examines the scientific, technical, environmental, human health and safety, and regulatory aspects of uranium mining, milling, and processing as they relate to the Commonwealth of Virginia for the purpose of assisting the Commonwealth to determine whether uranium mining, milling, and processing can be undertaken in a manner that safeguards the environment, natural and historic resources, agricultural lands, and the health and well-being of its citizens. According to this report, if Virginia lifts its moratorium, there are "steep hurdles to be surmounted" before mining and processing could take place within a regulatory setting that appropriately protects workers, the public, and the environment, especially given that the state has no experience regulating mining and processing of the radioactive element. The authoring committee was not asked to recommend whether uranium mining should be permitted, or to consider the potential benefits to the state were uranium mining to be pursued. It also was not asked to compare the relative risks of uranium mining to the mining of other fuels such as coal. This book will be of interest to decision makers at the state and local level, the energy industry, and concerned citizens.

Advances in Productive, Safe, and Responsible Coal Mining This book features selected papers presented at the International Conference on Information Management and Machine Intelligence (ICIMMI 2019), held at the Poornima Institute of Engineering & Technology, Jaipur, Rajasthan,
India, on December 14–15, 2019. It covers a range of topics, including data analytics; AI; machine and deep learning; information management, security, processing techniques and interpretation; applications of artificial intelligence in soft computing and pattern recognition; cloud-based applications for machine learning; application of IoT in power distribution systems; as well as wireless sensor networks and adaptive wireless communication.

Sago Mine Disaster and an Overview of Mine Safety 2012 International Conference of Intelligence Computation and Evolutionary Computation (ICEC 2012) is held on July 7, 2012 in Wuhan, China. This conference is sponsored by Information Technology & Industrial Engineering Research Center. ICEC 2012 is a forum for presentation of new research results of intelligent computation and evolutionary computation. Cross-fertilization of intelligent computation, evolutionary computation, evolvable hardware and newly emerging technologies is strongly encouraged. The forum aims to bring together researchers, developers, and users from around the world in both industry and academia for sharing state-of-art results, for exploring new areas of research and development, and to discuss emerging issues facing intelligent computation and evolutionary computation.

Mining Science and Technology 1996 This book comprises technical papers that were presented at the International Mining Forum 2004. This event aims to bring together scientists and engineers in mining, rock mechanics, and computer engineering, with a view to explore and discuss international developments in the field. The book is addressed to researchers and professionals who work in

Automatic Manufacturing Systems II The Office of Industrial Technologies (OIT) of the U.S. Department of Energy commissioned the National Research Council (NRC) to undertake a study on required technologies for the Mining Industries of the Future Program to complement information provided to the program by the National Mining Association. Subsequently, the National Institute for Occupational Safety and Health also became a sponsor of this study, and the Statement of Task was expanded to include health and safety. The overall objectives of this study are: (a) to review available information on the U.S. mining industry; (b) to identify critical research and development needs related to the exploration, mining, and processing of coal, minerals, and metals; and (c) to examine the federal contribution to research and development in mining processes.

Computing and Intelligent Systems

Mine Safety Science and Engineering

Information Computing and Applications In Mining Engineering operations, mines act as sources of constant danger and risk to the miners and may result in disasters unless mining is done with safety legislations and practices in place. Mine safety engineers promote and enforce mine safety and health by complying with the established safety standards, policies, guidelines and regulations. These innovative and practical methods for ensuring safe mining operations are discussed in this book including technological advancements in the field. It will prove useful as reference for engineering and safety professionals working in the mining industry, regulators, researchers, and students in the field of mining engineering.

Energy Research Abstracts

Coal Scientific and practical studies of raw material issues presents the contribution to the
Russian-German raw materials forum. The main theme of the book is problematic issues of subsoil use, whereby the contributions are divided in two main parts: - Exploration, mining and processing, and - Mining services Paying much attention to complex processes in the mining industry, Scientific and practical studies of raw material issues will be of interest to academics and professional involved or interested in Mining Engineering and Earth Sciences.

Underground Mine Communications In a world of earthquakes, tsunamis, and terrorist attacks, emergency response plans are crucial to solving problems, overcoming challenges, and restoring and improving communities that have been affected by these catastrophic events. Although the necessity for quick and efficient aid is understood, researchers and professionals continue to strive for the best practices and methodologies to properly handle such significant events. Emergency and Disaster Management: Concepts, Methodologies, Tools, and Applications is an innovative reference source for the latest research on the theoretical and practical components of initiating crisis management and emergency response. Highlighting a range of topics such as preparedness and assessment, aid and relief, and the integration of smart technologies, this multi-volume book is designed for emergency professionals, policy makers, practitioners, academicians, and researchers interested in all aspects of disaster, crisis, and emergency studies.

Guidelines for Slope Performance Monitoring Spearheading the promotion of international technology transfer in the fields of mine planning, mining systems design, equipment selection and operation techniques, the International Symposium on Mine Planning and Equipment Selection is recognised by the mining society as a key annual event in highlighting developments within the field. Here in this volume, proceedings from the thirteenth annual symposium concentrate on the following major topics: - open pit and underground mine planning, modelling and design - geomechanics - mining and processing methods - design, monitoring and maintenance of mine equipment - simulation, optimization and control of technological processes - management, mine economics and financial analysis - health, safety and environmental protection. Including 147 papers from leading experts and authorities, Mine Planning and Equipment Selection undoubtedly provides valuable information and insight for a range of engineers, scientists, researchers and consultants involved in the planning, design and operation of underground and surface mines.

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