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CONTENTS

Secure i-Voting Scheme with Blockchain Technology and Blind Signature

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Abstract. In the last four years, blockchain technology affected largely all aspects of our lives. Blockchain started to launch a new technological revolution of storing digital transactions over the Internet, verifying the authenticity, licensing and providing the highest degree of security and encryption. Blockchain usage started with digital currency then its implementation extended to many industries such as voting, health records, copywriters, real estates and so on. However, it is time to upgrade the election scenario from practicing paper-based elections to use modern technologies in order to facilitate our lives. The fact that the blockchain technology has demonstrated almost infinite immutability and high resistance against hacking, lends credit to employ it in securing election data from fraud by saving every single piece of data, record or transaction with unchangeable history. In this paper, we propose and test implement a robust online voting system based on blockchain in order to prevent election forgery and ease the voting process for citizens. The essence of our research lies in abandoning alterable traditional databases and replacing them with two private blockchains that use the peer-to-peer network. Along with the blockchains, we utilized blind signature to maintain vote/voter privacy in order to safeguard voter eligibility validation against manipulation and forgery. Lastly, we discuss a threat model, and suggest solutions overcome it; we also suggest a solution to identity impersonation and vote-selling problems.

Keywords: Blockchain, Internet Voting, Vote/Voter privacy, Blind Signatures, Public-Private Key algorithm anonymization.

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Social Aspects of Big Data Technology Implementation

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That which has been, is that which is to be,
and that which has been done,
is that which will be done,
and there is no new thing under the sun.
Ecclesiastes 1:9

Abstract. Big Data is supposed to be one of the main traits of new coming digital era. Its technological aspects are usually widely discussed, whereas social peculiarities are mostly neglected. We present main approaches to Big Data, and argue that despite seeming revolutionary technology, Big Data can be treated as a new tool to produce knowledge. That means, it generates the same risks and challenges as other breakthroughs we witnessed previously. To our viewpoint, cultural aspects should be as counted as a main issue in Big Data implementation. Since the inability to control big data through prohibiting some peculiar features it possesses, we argue that one should focus on such practical steps as terminology improvements, and the evaluation of societal outcomes of the new technology.

Keywords: Big Data, Cultural Aspects, Scientific Infrastructure, Megascience, Research and Innovation Policy, Socio-Economic Challenges.

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State regulation of the introduction of digital technologies in the oil and gas complex of Russia

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Abstract. Using digital technologies for the oil and gas production requires the organization of a generalized network of wireless interaction of components, continuous data collection from various sensors and sensors, the collection and exchange of information in order to detect complex events and critical moments, their analysis and detailed description based on the situation. However, the digitization of basic technological processes and operations in the Russian oil and gas complex is proceeding more slowly than in many other areas of production. Government assistance can stimulate the process of digitization of the oil and gas industry. The government authorities form and develop a regulatory framework in the field of and digital transformation of oil and gas production. This article presents a scheme of government regulation for the digital transformation of oil and gas production.

Keywords: Sustainability development, Government regulation, Competitiveness of enterprises, Digital technologies.

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An Educational Model of Graduation Project for Students at Automation and Computer Engineering

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Abstract. The upcoming engineers, students at Automation and Computer Engineering, acquire, during four years of education, a tremendous theoretical information in different areas connected with their educational field of study. From solid mathematical backgrounds to electronics and automation and many other subjects become a stock of incredible useful database for future engineers. The lack of adequate practical work that allow them to connect and get aware on how to use information acquired, lead, in most of the situation, to a useless database of information. This paper presents a model of a good practice work and aims to be a useful example for students in the last year of study on how to handle and realize, starting from one idea and finishing with a working prototype, their graduation project. The example here is a low cost, handy, a real time data acquisition and duplex wireless data communication system. It consists of two modules. The first one is a glove used by an operator, equipped with an Arduino board with a gyroscope, accelerometer and full duplex communication parts that sends movements commands to a mobile robot. The mobile robot is equipped with a camera sending video streaming related to the immediate space and a network of sensors with the aim to acquire environmental data and sent them remotely to the first module.

Keywords: network sensors, hazardous environments, underground spaces, wireless communication

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Reforming Russian legislation for crimes in the digital economy

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Abstract. The aim of this research work is to analyze Russian criminal legislation on punishment for computer crimes. The growth in the number and intensity of cyber-attacks throughout the world also leads to an increase of costs for companies and society as a whole to provide protection against cyber-attacks and to prevent losses from them. The financial sphere of the economy suffers especially. The article provides statistical and expert data on the potential damage from the suspension of the financial institution's activities, including lost profits and costs for restoring websites after cyber-attacks. A significant increase in the number of crimes committed with the help of digital devices and a multiple increase in the amount of damage from them were revealed on the basis of an empirical study. On the part of the business community, the demand for the state to toughen penalties for computer crimes is increasing. To this end, in 2018 novels were introduced into the Criminal Code of the Russian Federation, which toughened criminal liability for embezzlement of funds from bank accounts or electronic money. It is shown that the changes introduced by the legislator in the criminal legislation of Russia take into account modern threats to economic security and increase the level of protection of the financial interests of citizens, credit organizations and the state as a whole.

Keywords: economic losses, punishment, computer crimes, criminal punishment, stealing money, cyber-attacks

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A study on market intelligence: the professional, the applicability of information technologies to innovate and gain competitive advantage

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Abstract. With the evolving market of various industries, business management specialists are creating a demand for information technology to gain competitive advantage. Within this context, technology management specialists seek to innovate by creating systems that offer results with differentials. In this paper, we seek to present the connection between the study of Business Administration and Information Systems, addressing a brief history of Market Intelligence, its evolution and the importance it has for most business sectors. We have strengthened the argument why information technology is an essential investment for the success and survival of any organization today. We intend to contribute with theoretical material for future research on the subject.

Keywords: Market Intelligence, Information Technology, Innovation, Advantage, Data Science.

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