University of Business Engineering and Management Banja Luka

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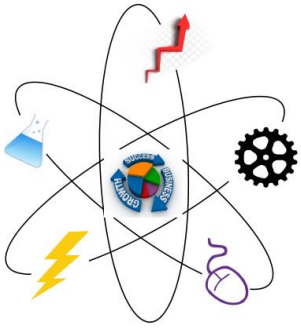
Faculty of Engineering, Department of Electrical Engineering, Electronics and Computers

CONFERENCE ABSTRACTS

SOCIAL AND TECHNOLOGICAL DEVELOPMENT 2017

INNOVATIVE IDEAS IN SCIENCE 2017



SOCIAL AND TECHNOLOGICAL DEVELOPMENT 2017

INNOVATIVE IDEAS IN SCIENCE 2017

BOOK OF ABSTRACTS

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An Accurate Technique for Finding the Coefficient of Rolling Friction Using the Inclined Plane Method

Alaci Stelian, Ilie Musca, Cristian Barz, Sorinel Toderas Siretean and Florina–Carmen Ciornei

ABSTRACT

Finding the coefficient of rolling friction (CRF) by the inclined plane method is similar to the manner used in establishing the coefficient of sliding friction. For the rolling case, the difficulty arises from the fact that the usual devices employed in angular measurements present errors greater than the effective angle. The paper surmounts this inconvenient by obliging the body to roll along a well controlled direction different from the steepest line of the plane. The experimental values found for the coefficient of rolling friction are in good agreement with the ones from literature.

KEYWORDS

rolling friction, inclined plane

Approaches for the planning and implementation of industry 4.0

Cristian Barz and Klaus C Jalba

ABSTRACT

The continuous degree of automation in industry and the networking of individual components such as machines, robots, autonomous drive systems, control units etc. open up new possibilities for linking production and service, or integrating customers and business partners into value-added processes.

In this technical revolution, machines should be able to decide independently and even contribute to developments. Before the implementation, planning should be carried out in the planning stage, where industry 4.0 can be implemented, what should be achieved, how can corresponding plans be implemented, and what aspects of security, machine ethics, information ethics or work ethics must be considered. While answering these questions, can be find out what resources of material and immaterial nature are needed and what are the advantages and disadvantages to be expected.

Network control of Simatic S7-1200 PLCs for industrial processes

Barz Cristian, Klaus C Jalba, Nicolae Ungureanu, Chiver Olivian, Ioana Tascu, Sinisa Dragutinovic, Dragan Felicia

ABSTRACT

The paper presents different types of controlling and monitoring an industrial process through web interface, depending on the connection types made by PLC or HMI used in the process. We can control the industrial processes through HMI interface directly on the web or phone if we use a Weintek HMI in connection with a SIEMENS PLC for manipulating

The possibility to control the SIEMENS PLC S7-1200 is also given by an internal Web server which requires to create an HTML interface and different levels of security for users. Web interfaces are more necessary in controlling and monitoring different processes for future development in IoT structure.

KEYWORDS

PLC; SIEMENS; industrial process, HMI, network control

The Impact of Social Networks on the Behaviour of the Students. Case study: Faculty of Engineering Hunedoara

Benea Marius, Jelena Siberevic

ABSTRACT

The Internet is currently the largest computer network on our planet. You can call it network of networks. The Internet no longer confined to universities, industries and Governments. Today everyone use it, because each individual can now join the network. The Internet allows to exchange information freely. At the same time, there is the dynamic development of the social networks that are becoming more popular and more widely used. As a result companies introduce new promotion tools taking advantage of the benefits provided by the new technologies.

The goal of this article is to analyze the impact of social networks on the behaviour of young consumers in the information society. This article will introduce the tools used by companies for the promotion in social networks based on different parameters. The article will also show the advantages and the disadvantages of the promotion by social networks. The article will present the reflections based on secondary data that show the development of social networks in Romania and in the world as well as the results of empirical research carried out among students of Faculty of engineering Hunedoara (Romania).

KEYWORDS

Social networks in function of strengthening image and development of branch

Benea Marius, Nikola Vojvodić

ABSTRACT

There are a few things that we look at daily and in which marketing is not involved, and very often we are not even aware of the extent to which we are susceptible to various marketing messages that in some way affect us. Whether I want to admit it or not, we are all part of one big global marketing globally circulating ball and sends us various stimulus with the goal of making a profit. Things in the developed countries are clearly set out, but what's the situation with us and do we actually understand all the concepts related to this area. Social networks represent a contemporary, global phenomenon that connects all people, regardless of where they are in the world, by accessing the Internet. Thus, it is possible for people who are not physically close - society, family - have an insight into the events regardless of the possibility of physical encounter. Today, a large number of social networks have been developed, so people can decide on which network they want to be a member, and it should be kept in mind that many people are simultaneously members of two or more social networks.

Social networks offer numerous opportunities and have various content for socializing and entertaining people, and besides socializing, many other benefits can be achieved. For example, companies have so far implemented their marketing and promotional activities through other means, through radio and television commercials, billboards and other public and private advertising media. However, through the development of social networks, their popularization and broadening, companies have noticed that social networks are a potential place where they can promote the business of their company, completely free, and that millions of people can see the advertisement. As a result, the companies became members of social networks gradually becoming, by which they inform the existing and potential users of their services / products about novelties, that is, about the action prices, new products in the assortment, and all other facts and changes that are relevant to the enterprise which the consumer should find out.

KEYWORDS

Solar Energy Valorification in the Sustainable Development Context in North - West of Romania

Brezoczki Valeria, Gabriela Filip

ABSTRACT

The paper presents a viable success alternative for solar energy valorification to generate electricity in a Nord – West Romania community, respectively in Baia Sprie town.

The electricity provided by solar power plant is used for city streets lighting system and partially replace conventional electricity, almost 25% and it is an energetic alternative that does not harm the environment in accordance with the context of Sustainable Development.

The paper theme are in line with the European Climate Change Programme and Romanian Regional Sustainable Development Strategy whose objectives by 2020 are to get 20% of the energy needs from renewable sources while reducing the used conventional energy consumption by 20%.

KEYWORDS

solar energy, valorification, streets lighting system

Study on the End Winding Inductance of Three-Phase Windings in Two Layers

Olivian Chiver, Liviu Neamt, Cristian Barz, Eleonora Pop, Cristinel Costea and Zoltan Erdei

ABSTRACT

The paper deals with the problem of determining the stator end winding inductance of A.C. machines. It refers to the two-layer windings with shortened pitch, the relative pitch being less than one. The inductance has been determined by numerical analysis based on finite elements method (FEM), the procedure being described in this paper. In order to validate the procedure, a comparison between FEM results and laboratory tests has been made for one of the modelled machine. The results have been very close. After that, a comparative FEM-Analytical study was performed. It was used its own program to design and realize the numerical models needed for the study. Also, in the design phase of the models, the end winding inductance has been determined, with analytically relations used in the literature, by the same program. Based on more than 130 models, with different types of windings, some important conclusions have been depicted.

KEYWORDS

End Winding Inductance, A.C. Machine, FEM, Two Layers

A Dilemma Regarding a Model from Fluid Mechanics

Ciornei Florina-Carmen, Cristian Barz , Stelian Alaci, Ionut-Cristian Romanu and Bogdan-Ion Dragoi

ABSTRACT

In order to model natural phenomena, a faithful model describing the evolution of the analyzed phenomena must consider as many aspects as possible. An advantage of a correct representation of the studied phenomenon is the highlighting of the aspects hard to notice initially. To support these affirmations, two examples are brought into attention, from the dynamics of a point and from spatial kinematics respectively. Starting from the idea of improving a vertical falling sphere viscometer, a model of rotational viscometer is proposed. The viscosity is determined when the resultant torque is zero. From the equation of dynamic equilibrium for rotational motion two values for viscosity are obtained, both probable in equal manner. The concern of the paper is to find a criterion for the selection of the correct solution and also to explain the meaning of the other root.

KEYWORDS

viscosity, numerical method, choice criterion

Dual image steganography based on pixel shuffling

Ovidiu Cosma

ABSTRACT

Steganography is a technique of hiding secret information into an innocent looking container. Although a large number of steganography techniques exist, there is a constant need for new ones because they have a relatively short lifespan, being constantly defeated by steganalysis methods. Least Significant Bit substitution (LSB) is one of the best known steganography techniques. It embeds the secret data into the LSB of image pixels. The main advantages of this technique are simplicity and high embedding capacity, but the main disadvantage is weakness. The method is easily detected by staganalysis methods. This article explores the possibilities of increasing the strength of LSB steganography by shuffling the image container pixels following a rule dictated by the pixels taken from a second image. The proposed method also contains an encryption block that adds an extra layer of security to the hidden data.

KEYWORDS

image steganography pixel shuffling

Autonomy and Cooperation in Internet of Things based on Blockchain technology

Costea Cristinel, Adrian PETROVAN

ABSTRACT

The special interest shown recently in Blockchain and Internet of Things highlighted the possibility of implementing distributed functionalities in nodes as close as possible to the source of data. The paper discusses advantages and challenges of blockchain technology to enable autonomy in Internet of Things, focused on traffic performance monitoring using a series of small single-board computers. Each node will allow running autonomous agents for monitoring point to point links within the network or benchmark with other nodes on the Internet. Through this approach performance evaluation is less influenced by particularly features of the devices, give confidence in the integrity of the data and allow cross-organizational collaboration.

KEYWORDS

Distributed Systems, Blockchain, Internet of Things

Relevant Aspects of the Responsabilities in International Projects Management

Anamaria Dăscălescu, Miorița Ungureanu

ABSTRACT

Usually, the international Projects are of greater importance and with greater founding than national projects, involve multiple partners from different countries and are subject of nationals and international controls. The paper underline responsibilities of the management team both to the Project Contract and to the national laws requirements, responsibilities for managing human resources, time and costs. For a successful Project implementation, the same importance should be given to communication, visibility and dissemination rules as well as reports quality. Major importance is granted to the quality of Project results.

KEYWORDS

Mythology Inspired Brand Names and Brand Awareness amongst End-Users

Demarcsek Ramona, Todea Luminita, Falaus Anamaria

ABSTRACT

The brand name is the one element that consumers immediately recognize and which creates a connection in their minds with a certain product or a given producer. Modern businesses have discovered that there is no marketing strategy more powerful than coming up with a catchy name or image that will stick to the consumer's mind and generate a certain association of qualities with that specific product based on the meaning of that name. Myths and legends have always been fascinating; they appeal to the consumer's inner most core. Using the names of deities that people can relate to or relate to their powers means transferring some of these deities' features onto the product, and thus onto the user. This seems to have been a quite successful marketing strategy. This paper takes a closer look at some of the most famous company names and brands inspired by ancient deities, and attempts to discover to what extent end-users are knowledgeable in terms of ancient mythology, aware of the meaning of the brand name, as well as of the connection between the brand name and mythology.

KEYWORDS

brand name, consumer, mythology, end-user, brand awareness

Fire Safety and Fire Standards for Green Living Walls

Dimitrijević Dragana Jovanović, Predrag Živković

ABSTRACT

Buildings fire prevention and protection requirements concern the personal safety of the occupants including the protection of material values and are the basic issues addressed by building regulations. How the material reacts in a fire and/or their fire resistances are two factors for choosing a building material and way the material is implemented and used to provide the required level of passive fire protection. Environmental and aesthetic benefits provided by Green Living Walls are known from numerous researches but we still lack on the national guideline, code or standard concerning Green Living Wall systems in Serbia. Properly designed, installed and maintained Green Living Walls should prevent a potential fire hazard. This review paper identifies reports, studies, guidelines, and standards concerning fire risk introduced by specific Green Living Wall system design elements.

KEYWORDS

green wall, fire, safety, standard, vegetation

Determining the Efficiency of Solar Energy Thermal Consumption on a Measuring Station

Dobrnjac Mirko, Miloš Markovic, Sanja Dobrnjac

ABSTRACT

Monitoring of the manifestation of solar radiation and the exploitation of this type of energy predominantly imposes the need to measure a number of parameters related to radiation itself, as well as radiation receivers and other devices of the system. Thermal receivers with liquid as a solar energy transmitter have now become consumer goods with a large number of manufacturers. Their examination is important with several aspects; from scientific research, for their further research and development, but also from the perspective of consumers, as they obtain reliable information on the quality of solar collectors, on the basis of which they choose the most optimal solution. The paper presents a solar measuring station where the described measuring devices are used for measuring the parameters in the operation of the solar thermal panel and give examples of the presentation of the processed results.

KEYWORDS

heat transfer, solar collector, measuring station, energy efficiency, solar energy

Ethical-political paradigms and political deontology

Domide Octavia, Domide Gherasim Solovestru

ABSTRACT

One of the least researched, but important issues in the field of political sciences is the implication of social responsible policies in making and implementing public policies and which are the bases of the social responsibility issue.

There are some fundamental questions that are filosofical ones, but which represent part of the base of political theories. This are conceptual issues that reflects today society and which is ought to be defined and researched. On the other side we may find normative issues that refers to the principle that form the fundament of the political constructions, the way in which the political society is grounded and justified.

A number of conceptual tools are suggested for the analysis of the relations between political and the other authorities that seek to govern economic activity, social life and individual conduct. Therefore, we will address some issues related to the improvement of institutions that transfere the theoretical principles into practice, being an area of interest between theoretical politics and practical politics, institutions implementing both principles and mechanisms through which politics serves the public interest.

In this paper we would reveal some classical ethical and political paradigms, which form the basis for a new paradigm, that comes to cover the shortcomings of the traditional paradigms and help to understand the new world, the changes, the crisis, the globalization process and the new responsibilities of the actors involved in all political actions. Thus, this will lead us to to a political deontology, often encountred in practice in codes of ethics.

KEYWORDS

social responsibility, ethical-political paradigms, political deontology, globalization

A cautionary note on using a self-assessment measure of emotional competence on high school students

Došen Gabriela Ninković, Ivana Živković and Siniša Subotić

ABSTRACT

We explored the impact of socially desirable responding (SDR) when assessing the outcomes of the emotional literacy training for high school students using a self-report measure of emotional competence (EC). The training was conducted on a total sample of 737 high school students from the Republic of Srpska. As a part of the training effects evaluation process, some participants (N=134; 71.64% females) were given a measure of SDR (BIDR-6-SF, which contains Self-Deception-Enhancement (SD-E) and Impression Management-Denial (IM-D) subscales) in addition to the EC questionnaire (UEK-15), both before the workshop and one month later. Mean EC scores were significantly higher in the post-test: $F(1, 133)=13.08$, $p<.001$, $\eta p2=.09$. However, when the SDR scores were controlled for, the difference became non-significant: $F(1, 129)=0.39$, $p=.532$, $\eta p2=.003$. This was entirely due to the influence of posttest SD-E: $F(1, 129)=7.19$, $p=.008$, $\eta p2=.053$. Pretest SD-E ($\beta=.37$, $p<.001$) and IM-D ($\beta=.05$, $p=.55$) explained 13.7% of pretest EC variance. Posttest SD-E ($\beta=.44$, $p<.001$) and IM-D ($\beta=-.01$, $p=.92$) explained 19.2% of posttest EC variance. When pretest and posttest SD-E and IM-D, and pretest EC were used as predictors of posttest EC, 59.3% of its variance was explained, with only pretest EC ($\beta=.64$, $p<.001$) and posttest SD-E ($\beta=.24$, $p<.001$) being significant predictors. Thus, a self-report measure of EC is clearly “saturated” with a significant amount of self-deception variance, making it arguably a poor choice when assessing the outcomes related to the emotional literacy/competence training of high schoolers. We suggest that additional, preferably not self-report measures of the EC should be used.

KEYWORDS

emotional competence, socially desirable responding, self-report measures, high school student’s competence training, workshop/training effect assessment

Experimental research based on statistics, aimed to improve the quality of the parts obtained through machining, at some consumer goods

Dragan Liliana

ABSTRACT

The paper aims to carry out experimental research meant to increase the quality of some mass produced furniture items. In order for that to happen, a great number of size measurements have been done on beech and birch wood parts obtained through milling and drilling with numerically controlled machines. The experiment lasted for a week, with work being done in two shifts and with a volume of 300 parts per shift.

The experimental database was then processed and interpreted in line with the statistical analysis methods. Finally, conclusions regarding the measures that need to be taken in order to assure an accurate adjustment of the machine as well and an optimisation of the production process were formulated.

The Effect of Hydrocarbon Fuels Variation Onto Flame Propagation in Particular Combustion Chamber with Strong Macro Flows

Dragutinovic Sinisa, Masonicic Zoran, Dragan Nikolic

ABSTRACT

In this paper some results concerning fluid flow pattern and the evolution of flame propagation through unburnt mixture of two different hydrocarbon fuels in engine with strong macro flows were elucidated. Results presented in this paper were obtained by dint of multidimensional numerical modeling of reactive flows in very complex geometry of particular combustion chamber with four tilted valves. Flame propagation was represented by the evolution of spatial distribution of temperature in various cut-planes within combustion chamber while the flame front location was determined by dint of zones with maximum temperature gradient. The results presented are only a small part of broader on-going scrutinizing activity in the field of multidimensional modeling of reactive flows in combustion chambers with complicated geometries encompassing various models of turbulence, different fuels and combustion models. Fluid flow pattern and flame propagation for both fuels were obtained by dint of eddy-viscosity model i.e. with standard k-ε model of turbulence. The interplay between fluid flow pattern and flame propagation is entirely invariant as regards fuel variation indicating that flame propagation through unburnt mixture of CH4 and C8H18 hydrocarbon fuels is not chemically controlled but controlled by dint of turbulent diffusion.

KEYWORDS

Automotive Flows, Flame propagation, Combustion Modelling

S-Parameters Utilization for Analysis of High Frequency Analogue Two-Port Circuits

Erdei Zoltan , Mihai Iordache, Dragoș Niculae, Alexandru Grib

ABSTRACT

This study, using the theory of electric circuits, shows the right definition of scattering parameters (S-parameters) for any two-port electric circuit and the practical way to use these parameters in streamline the processes of information transmission and propagation, and the transfer of the active power from the electric quadrupole input (output) to their output (input). Starting from the correct definition of S-parameters, their calculation is performed automatically. Passive linear circuits in harmonic regime can be described by a certain number of equivalent circuit parameters, like transfer coefficients matrix (fundamental) T, impedances matrix Z, admittances matrix Y and S-parameters matrix S. In this study are presented the relations that permit the transition from a matrix to another one. To generate the reflection coefficients, input and output impedances, active power transmission efficiency from input to output (from output to input), signal transmission efficiency, S, T, Z and Y matrices, and Smith charts, there are developed specific routines in MATLAB and there have been used the current subroutines from MATLAB microwave toolbox. S-parameters variations by frequency have been presented graphically and on the Smith chart. The results obtained through simulation processes have been compared with the ones presented in the specialty literature and with the experiments results, calculated deviations being less than 5%.

KEYWORDS

Benefits and drawbacks of e-learning platforms in teaching ESL

Fălăuş Anamaria, Demarcsek Ramona, Todea Luminita

ABSTRACT

The current digital revolution and boom in the use of smartphones have triggered off a consistent change in our educational needs and necessities. The way we access information, consume, discuss and share content has evolved in such a way that makes the traditional landscape of classroom didactic processes obsolete and outdated. E-learning has become a "must" in the educational environment, being able to focus on the learners' needs and wants offering effectiveness, efficiency, and easiness in providing information. However there are also drawbacks to be taken into account especially if we have in mind the process of learning and getting practice in the use of a foreign language (English in this specific case). Consequently, this paper attempts to register both the positive and negative aspects of learning a foreign language through the means of e-learning platforms in order to improve teaching methods and techniques and meet the expectations and requirements of the present day digital society that we are all inhabiting.

KEYWORDS

e-learning platforms, ESL, classroom management, benefits, drawbacks

The Danger of Mercury Poisoning through Fish Consumption

Fodor Katalin, Barz Tatiana, Drăgan Felicia

ABSTRACT

Fish is an important source of protein, iron and zinc - essential nutrients for child growth and development, a source of energy for adults, elderly. Omega-3 fatty acids found in different fish species help develop children's brains, maintain flexibility in blood vessels and contribute to brain oxygenation by annihilating the destructive effect of the free radicals that have become more and more present in our everyday lives. Due to the mercury pollution of both the terrestrial and aquatic environment, there is the chance for the population to ingest significant amounts of mercury that could cause the undesirable diseases and metabolic manifestations once they have entered the body. Food security requires the elaboration of procedures and measures of informing the population in order to minimize the risks of mercury contamination in food.

KEYWORDS

fish, acids, omega-3, mercury, toxicity

A Quality Management Tool

Hajdu-Macelaru Mara Diana

ABSTRACT

Software quality management tool represents an important part of the development process of each software product, as it helps with the evaluation of the quality as well in keeping and tracking issues in the project, providing a good image of the overall quality. We will describe the challenges of developing a quality management tool, and we will use an adaptable software quality model. We will review current exiting quality management tools and we will compare them with our proposal tool.

KEYWORDS

software quality, quality management, web, mobile, desktop

Nonlinear boundary value problems arising in chemical reactor theory

Horvat-Marc Andrei and Ioana Tașcu-Stavre

ABSTRACT

In this article we obtain some numerical results for the considered problem

$$\begin{cases} u'' - u' + \left(-\frac{u}{2} + 1\right) e^{-\frac{1}{1+u}} = 0 \quad on\ [0,1] \\ u'(0) - u(0) = 0 \\ u'(1) = 0. \end{cases}$$

This problem arises from the theory of adiabatic tubular chemical reactors. To solve the problem from above we applied a common fixed point result for non-deceasing and weakly increasing operators in a partially ordered metric space.

KEYWORDS

boundary value problem, partially ordered metric space, adiabatic tubular chemical reactors

BIOT-SAVART Law Application in Wireless Power Transfer – Dependence of Magnetic Field to Angle Position

Iuga Bogdan, Radu-Adrian Tirnovan

ABSTRACT

The magnetic field of a closed loop of conductive wire can be computed due to Biot-Savart law, which analyses the value of the field at an exterior point from the transversal axis. If the measure point is out of the axis then the magnetic field has completely different values. A general stated form of this law can measure the value in any point, in relation to Euclidian distance from the loop.

KEYWORDS

Biot-Savart law, exterior magnetic field, closed loop

Lobbying as Ground Communications in the Function of Improving the Socio-Economic Development in the Process of EU Integration

Jaganjac Jasmin, Željko Kovačević, Aleksandra Pušara

ABSTRACT

Lobbying is a term with multiple meanings, the origin of which is derived from the English word which means LOBY hall, where the talks were held. Over time, in modern society, are derived concepcts LOBBYING, meaning negotiation, and lobbyists, which means a person who negotiates. Lobby and advocacy resulting in the 17th century in Britaina in parliamentary-practice, a lot of the meaning and application of lobbying gets in American practice, where the lobbies of the system, and their work is governed by rules.

Today and in the future lobbying is and will be the primary means of communication in the social and economic relations, and the penetration of the world market. Involvement of the national economy (state) in the European integration process creates the conditions for the opening of markets and increased freedom of movement of goods and services, capital and people, and that is a prerequisite to achieve lasting economic growth, where lobbying plays an important role.

The role of lobbying exposed within the economic diplomacy in the global process of creating a spirit of openness and cooperation, increased trade and aid to developing countries.

Starting from the fact that economic diplomacy in the broader sense blend of diplomacy and diplomatic skills in the classic sense, economics, management science, methods and technniques of negotiation, public relations, economic espionage, it is lobbying the negotitation skills of particular importance in the economic and political area.

The primary function of lobbyng becomes the protection and promotion of national economic interests in international economic relations, and that`s the main goal of this work, a task in the domain of the role of lobbying in the contemporary socio-economic relations, and the activities of lobbyists.

KEYWORDS

lobby, lobbyist, economic, diplomatic, social and economic relations

Energy Potential of Non-Wood Biomass in Serbia

Janevski Jelena Nikola, Branislav Stojanovic, Predrag Zivkovic, Dragana Dimitrijevic, Dejan Mitrovic

ABSTRACT

Limited resourses of fosil fuels and the greenhouse effect imposed a need for constant researches in area of usage of renewable energy sources (RES) a long time ago. Goal of this researches is using renewable energy sources more often. One of the types of renewable energy sources in Serbia is nonwood biomass. Nonwood biomass has two big advantages. You can find a lot of types of it, that's the first advantage. The second one is that you can find it almost anywhere. Despite that it is not used very often even if it's very good way of getting energy efficiently. Because of that, current potential of nonwood biomass will be shown in this paper (presentation) with a spesical attention on Vojvodina as best region in Serbia in terms of usage of renewable energy sources. We will try to explain every aspect of this whole story and some of them are: which types of nonwood biomass we use often, how much energy can we get out of this, machines that we use in this process, how much does it cost (how much do we pay for this process) and of course can we also count on nonwood biomass in future (is it a good solution for future projects).

Component-oriented modelling of dynamical systems in Python language on the example of the model of the sucker rod string

Kopei Volodymyr Bogdanovich, Vitalii Georgievich Panchuk, Oleh Romanovich Onysko

ABSTRACT

The principles of component-oriented hybrid modelling of complex dynamical systems based on the Python language and its SymPy and SciPy libraries have been proposed. The Python-classes that allow you to create the models in Python without the need to study and apply specialized modelling languages have been developed. These classes can also be used to automate the construction of a system of equations, describing the behavior of the model, in a symbolic form. The basic set of components has been developed - 1D translational components "mass", "spring-damper", "force". Using these components, the models of sucker rods string have been developed and simulated. These simulation results were compared with simulation results in the Modelica language. The replacement of differential equations by difference equations allowed us to simplify the implementation of the program and the requirements for the modules for symbolic mathematics and for solving equations.

KEYWORDS

dynamic system, Python, component-oriented modelling, hybrid modelling, sucker rod string.

Big Data and Internet of Things as the basis for the innovative development strategy of the Industry in the future called Industry 4.0

Latinović Tihomir S. , Preradovic Dragana, Cristian Barz, M. T. Latinović, Pop-Vadean Adina

ABSTRACT

The aim of this paper is to establish a link between the Big Data, the Internet of Things and the new industry, called Industry 4.0. The development of a modern economy is based on supply chains and logistics. Within each logistics are IT solutions. Some of the world's solutions are given in this paper and guidelines are set in the development of such solutions. Industry development 4.0, and in particular the development of Big data, gives us the opportunity to introduce new ways of the industry. In the development of industry, maximizing production and reducing costs is extremely important. Real-time data and advanced algorithms make it possible to obtain real-time operational industry. Big data and their analysis are of great use in the industry because they improve the accuracy of the decision-making process. It is very important to organize a structure that can design, manage and develop projects based on IoT and Big Data / Analytics technologies. In the industry, good sensor technology provides access to information. The paper has a focus on the managing the database with Big data in the Internet of Things.

KEYWORDS

Big Data, Internet of things, Industry 4.0

Computer modeling of the scanning signal to detect metallic inclusions in raw materials

Leonid Zamikhovskiy, Ivan Levitsky

ABSTRACT

Modern technological processing various bulk materials provide high requirements for the quality of input raw materials. As practice shows, penetration of metallic inclusions in the raw material takes place during its extraction and during the passage of individual cycles of the technological process and leads to low quality of the output products, and often - to failure of technological equipment, which requires the development of effective methods for controlling metallic inclusions
The analysis of existing methods, models and hardware-software tools for controlling metallic inclusions in bulk raw material was carried out as a result of which the method of scanning control was proposed. The essence of the method is to create a scanning signal with a moving maximum value of the amplitude of the "bell-shaped" shape magnetic field intensity within the width of the conveyor line, which transports the bulk raw material, and the processing of received signals, identifying the presence, localization and overall dimensions of the metallic inclusions.
To confirm the performed calculations of the characteristics using radiated magnetic coils of the scanning signal, a computer simulation of the process of its formation was carried out in the software package VisiMag. The results of modeling, which confirm the effectiveness of the proposed method were given, in particular the formation of a scanning maximum with an explicit maximum magnetic field intensity.

KEYWORDS

control system, executive devices, measurement, metallic inclusions, data transmission system, conveyor line

Investigating the operation of a turbidimeter for monitoring the turbidity of water at the water intake

Leonid Zamikhovskiy, Svitlana Petriv

ABSTRACT

The operational definition of water turbidity is an important step in checking the quality of drinking water.

In this work an analysis of existing methods and systems of operational control of turbidity of water was carried out, and design of turbidimeter consisting of a two-channel sensor (measuring and reference channels) and a measuring device (transmitter) was proposed. Unlike other methods, where the comparison, when applying feedback, is carried out in light passing through the photocurrent of the photodetector or on a measuring bridge, in the proposed design, the turbidimeter is compared to the measured medium (water), which allows to sharply improve the metrological characteristics of the turbidimeter.

The results of the study of the operation of turbidimeter during forced water supply of river water through it by centrifugal pump are considered, this is due to the impossibility of direct water supply to it through a complicated water intake relief.

The installation on a base of hardware-software tool of the Siemens WEB-based system of monitoring water turbidity in the water intake of public enterprise «Ivano-FrankivskVodoekotekhprom» on Bystrysia Solotvyn and Bystrytsia Nadvirna rivers and results of its exploitation are considered. It has been shown that the use of this system allows to react promptly to a sharp change of water turbidity and to prevent entering it to the treatment facilities and, thus, significantly reduce the cost of water purification

KEYWORDS

turbidity, method, turbidimeter, sensor, measuring channel, monitoring system

Control system of operation of gas pumping unit taking into account its technical condition

Leonid Zamikhovskyi, Natalia Ivanuyk

ABSTRACT

Today, one of the urgent tasks set before the gas transportation system of Ukraine is to ensure the efficient and reliable operation of automated control systems for compressor stations, and in particular automatic control systems for gas-pumping units (GPU). At the same time, automatic control systems of GPU should respond to changes in the technical state of the GPU, which requires the use of modern methods and diagnostic tools, and take this change into account when choosing the optimal modes of operation of the GPU and the compressor station in general.

The system of vibration diagnostics of the technical condition is considered on the basis of the latest development of Siemens Concern - a technological module for measuring the vibration parameters of SM1281 Condition Monitoring with a set of accelerometers (industrial standard for IEPE - Integrated Electronics Piezo-Electric) and structure of its parameterization is described. The system of vibration diagnostics has been tested at the study of the technical state of the nodes (centrifugal guide apparatus, axial compressors, low and high pressure turbines) GPU-C-16S on the compressor station KS-3 "Dolina" of MPA "Prykarpatransgas".

The hardware configuration using TIA Portal V13SP1 (Totally Integration Automation) Siemens design, the automatic control system of GPU on the basis of the Simatic S7-1200 PLC and the SM1281 Vibration Module are described.

It is shown that the use of the given system of vibration diagnostics ensures its direct integration into the existing systems of automatic control of GPU and dispatch control of compressor stations based on SIMATIC S7-1200 and unified hardware-software tools and procedures.

KEYWORDS

gas pumping unit, technical condition, vibration diagnostics

Automated flood water control system

Leonid Zamikhovskyi, Oksana Beley, Olena Zamikhovska

ABSTRACT

The lower level of the flood water control system will allow to normalize the analogue signals from the sensors (water level, amount of atmospheric precipitations and soil moisture) for further analysis and represented by four functions, namely: FC1 - the function of normalization of analog signals FC2 - the function of comparison of current values with the set values of the level (average and critical) FC3 - the function of comparison of current values with set values of precipitation (critical) and FC4 - function of comparison of current values with set critical values of soil moisture. The upper level of the system is the human-machine interface (HMI) SCADA WinCC, which displays the state of controlled values (graphical representation, archiving, and output of alarm messages). The time limits for controlling the level of flood waters and meteorological factors are set by the user of the system by himself.

The choice of monitoring points (automated gauging stations) for flood waters and meteorological data (soil moisture and amount of atmospheric precipitations) is determined by adjacent areas to the rivers, which are most exposed to flood waters, as well as their location in areas where the river is divided into two or more separate flows (branches).

KEYWORDS

flood, automated system, gauging stations

Intelligent fatigue failure control sensor (IFFCS) of drill string elements

Leonid Zamikhovskyi, Olga Lyskanych

ABSTRACT

The most promising method for the conditions of operation of the drill string of the existing ones- is a method for predicting the durability of its elements, such as threaded lock joints (TLJ), which are based on the use of a means of individual assessment of load - indicators of fatigue. Taking into account the limited possibilities of the previously developed methods for estimating the loading capacity of TLJ of the drill string, in the paper the advanced design of the indicator was proposed, by which it is possible not only to quickly obtain data on the residual life of TLJ in the specific operating conditions, but also to record the history of the variable load in the dangerous cross-section of the threaded joint, based on dependence obtained by the results of experimental research. Due to this, dedicated constructive-technological upgrades of TLJ will be carried out or the methods of calculating their strength will be improved.

KEYWORDS

Indicators, threaded lock joints, drill string

Methods of diagnosing the technical state of the gas-pumping unit GTC -25I of Nuovo Pignone company

Leonid Zamikhovskiy, Volodymyr Pavlik

ABSTRACT

The reliable operation of gas-pumping units (GPU) is due to their current technical state, which needs to be monitored in real-time, requires the use of effective methods for diagnosing GPU. A particularly relevant problem is the assessment of the current technical condition of the GPU GTC- 25I of Nuovo Pignone company, which is installed at the Urengoy-Pomari-Uzhgorod main gas pipeline.

The results of long-term development of methods for diagnosing the technical state of GTC-25I, installed at the Bogorodchansky compressor station LPAMP MPA "Prykarpatransgas", are considered. For many years, experiments were conducted in which vibration and acoustic vibration parameters were recorded with the help of specially developed technical means, as well as with the use of a standard SCADA system.

The results of the method development of parametric diagnostics of GTC- 25I are based on the use of discriminant analysis of its technological parameters. The choice of 8 of 16 technological parameters of GPU operation is justified, which were subsequently subject to discriminant analysis.

The results of the development of the method of diagnosing GTC- 25I and the use of artificial neural networks (ANN), in particular, a two-layer hierarchical ANN of direct distribution, which trains under the algorithm of back propagation of error, are presented. It is shown that the method of diagnostics of GPU GTC- 25I of “Nuovo-Pignone” company on the basis of artificial neural networks allows to increase the reliability of control of its technical state and can be used to control the technical condition of other types of GPU.

KEYWORDS

technical state, gas-pumping unit, artificial neural networks

Research of quantitative indicators of the solar energy potential in the Carpathian region of Ukraine

Mandryk O, N. Moskalchuk, L. Arhypova, M.Pryhodko, O.Pobygun

ABSTRACT

The paper presents the results of theoretical research of the solar energy resource potential calculated by different methods for administrative areas of the Carpathian region. The advanced methodology of the estimation of the solar power plants influence on the natural environment is proposed, which deals with the determination of the significance of the residual effects of renewable energy on the environment and is carried out after screening and mitigation measures and is based on the three identified parameters of influence: spatial, temporal and intensity of influence. The results of statistical analysis of observational data of meteorological stations within the studied region are presented. The results of experiments showed the power generation dependency by photovoltaic panels from meteorological elements of weather conditions. It is proved that the amount of received energy significantly depends on the cloudiness and air humidity. At the same time, it has no direct dependence on atmospheric pressure and wind speed indices. The paper presents the results of the cartographic processing of quantitative indicators of the potential of solar energy for the arrangement of the objects providing renewable energy in the Carpathian region of Ukraine.

KEYWORDS

solar energy, estimation of the influence, Carpathian region

Evaluation of the symbiosis between *Rubus fruticosus* and mycorrhizal fungi on the Bozanta Mare tailings pond in view of their use in ecological remediation

Monica Liliana Marian, Oana Mare Roșca, Zorica Vosgan, Lucia Mihalescu

ABSTRACT

Waste resulting from mining activity is today one of the biggest environmental problems. The mine deposit on the Bozanta Mare site, due to the high content of heavy metals (Pb, Cu, Cd, Zn, Cr, Ni), is a difficult substrate for the installation of a vegetal carpet. Naturally, a small number of species have been installed on the soil with a high concentration of heavy metals and a pH of 4.5-5. On the surface of the pond are wood species: *Pinus nigra, Robinia pseudacacia*; species from the regional flora: *Salix caprea, Betula pendula, Populus tremula*, and grassy species. An increased interest exists in the use of mycorrhisaes in ecological rehabilitation and in the stimulation of plant growth. The purpose of this paper is to identify and supplement the scientific data on the characteristics of mycorrhizal fungus with *Rubus fruticosus* species. Field samples were taken from the field, comprising soil samples from the rhizosphere and from 50 cm rhizosphere; roots, for identifing the possible mycorrhizal associations. The study of the root fragments in the Zeiss stereo microscope, Stem C2000 with camera, revealed regions with mycorrhisaes, at the II level of the radicles by thickening of the distal extremities and the presence of the mycelium, which substitutes for the absorbent cells of the roots. The colored microscope sections revealed the presence of the arbuscular mycorrhisal of Glomus sp. The presence of fungi colonies in the rhizospheric soil may be associated with the Rubus fruticosus studied. From the proximity of the roots of the species *Rubus fruticosus* we identified three species of fungi: *Penicillium sp., Aspergillus sp*. and *Rhizopus sp*.

KEYWORDS

environmental; fungi colonies; symbiosis

Inspire Concept and Digital Data Models

Nikolina Drago Mijic, Gabor Bartha, Tijana M. Vujicic

ABSTRACT

Access to spatial data and services constitutes an important basis for environmental policies for all public authorities and is therefore a central aspect of the Infrastructure for spatial information in the European Community. Since the Community institutions and bodies in most cases have to integrate and assess spatial information from all the Member States, INSPIRE recognizes the need to be able to gain access to and use spatial data and spatial data services in accordance with an agreed set of harmonized conditions. The INSPIRE Directive lays down a number of rights and obligations regarding the sharing of spatial data sets and services between all levels of government.

Article 17(8) of INSPIRE Directive requires the development of implementing rules to regulate the provision of access to spatial data sets and services from Member States to the institutions and bodies of the Community. Principles for sharing of spatial data sets and services between public authorities within and Member States, on the other hand, are contained directly in the Directive; the definition of the concrete measures to be implemented to this end is left to the responsibility of each Member State and is not within the scope of these implementing rules. The Regulation on INSPIRE Data and Service Sharing was adopted on the 29th March 2010.

The INSPIRE Implementing Rules on interoperability of spatial data sets and services and the data specification guidance documents are based on the UML data models developed by the INSPIRE Thematic Working Groups. These data models are managed in a common UML repository, which also stores older revisions of the models.

KEYWORDS

Member States, Spatial data, Service Sharing, Implementation, Data models

Impact of the facebook on costumers's behavior

Milic Mladen, D Djuranovic

ABSTRACT

Everyday life without social media is nearly unimaginable in the digital era. Shortly after the emergence of the first social media, the others followed, experiencing an unprecedented expansion towards all the pores of society, entertainment, cultural, sports, and all forms of life in a modern, developed world. In a relatively short period of time, a number of various social media with different areas of interest come into sight as well, such as: Facebook, Instagram, Twitter, Viber, Telegram, etc.

Social network Facebook is an important component of the Internet revolution and as such it is becoming an increasingly important tool for organizations in advertising and acquiring potential customers. By conducting the survey, opinions and attitudes of consumers in the Republic of Srpska about the ads on the social network of Facebook and influence their behavior were collected. The results of the research tell us that Facebook is a very used social network in the Republic of Srpska, especially among the younger population. Marketing advertising on this social network attracts close attention of consumers, about 80%, but the impact on their behavior on making purchase decision is far smaller and it is around 35%. Reasons for this we can look for in the standard and purchasing power of citizens, then the uncertainty in advance payment, the guarantee of delivery of the product, or the provision of services, etc.

KEYWORDS

social media, Facebook, consumer's behaviour, marketing

Applying Taguchi method to control the thermal expansion effect on machining process of aluminum alloy extruded profile

Stefan Adrian Moldovan, Vasile Nasui, Marius Cosma

ABSTRACT

In this paper we present a technological problem encountered in the machining accuracy of the parts for aerospace, made of aluminium alloy extruded profile with 7 meters length. Those parts have very tight tolerances and on milling process appear deviation due to thermal expansion effect, that influence the repeatability of machining processes.

Through several tests and recording all values during the milling process, was defined through Taguchi method the main impact factors which have impact on the machined parts.

Acknowledgement:

Applying Taguchi method to control the thermal expansion effect on machining process of aluminium alloy extruded profile is the result of an experimental research conducted with the support of the machining department of SC Universal Alloy Corporation Europe SRL, Dumbrăvița.

KEYWORDS

Taguchi, thermal expansion, repeatability of machining processes, aluminium alloy, CNC machines

Design of adaptive controllers of automated control systems based on Simatic S7 hardware and software

Mykola Nykolajchuk

ABSTRACT

The wide application of various regulators in automated control systems of technological objects determines the necessity to solve problems of constructing optimal, adaptive and with expanded functional capabilities of technological controllers. The toolkit for constructing technological controllers is Simatic S7 hardware devices (PLC S7-1200, Frequency Converter Sinamics G120C, TIA Portal V14) of “Siemens” company.

The control tasks are defined, choice of type regulator (PID-Proportional-Integral-Differentiating Regulator) is justified, the Simatic S7 hardware of the automated control system of the asynchronous electric drive of the technological installation is configured and parameterized, the control algorithm and the application program in the language of the FBD - Functional Block Diagram of the international standard IEC 61131 3 were developed.

The received results of modeling of technological controllers of control objects on the basis of developed models and simulator PLCSIM V14 «Siemens» are considered, namely: algorithm of control of asynchronous electric drive with frequency regulation and the method of constructing on its basis technological controllers for automated control systems, and also simulation model of technological regulator and application software of the automated control system with the technological controller;

The results of researches of processes and procedures of adaptive debugging of the parameters of the regulator from the change of control parameters and electrical parameters of the asynchronous electric drive are given.

KEYWORDS

Automated control systems, PLC, algorithm of control, PID – regulator, frequency control of asynchronous electric drive, simulation model, adaptive debugging

Analysis of the Commutation Overvoltage in Photovoltaic Power Generation

Liviu Neamt, Liviu Petrean, Olivian Chiver, Mircea Horgos, Sorin Sava, Alexandru Hotea

ABSTRACT

Photovoltaic (PV) power generation is not only clean green energy but is also especially appropriate for smart grids with distributed power generation. For a good exploitation of a PV system there are some regulations to be respected in accordance with local normative. Voltage and reactive power are two very stringent variables to be monitored. During voltage and reactive power control, dangerous transient phenomena could appear. Especially low active power commutation leads to overvoltages and unexpected current circulations. This work discusses the causes, effects and recommendations regarding above phenomena by interpreting the recorded oscillograms logged by the digital protective relays.

KEYWORDS

photovoltaic power generation, commutation overvoltage, digital relays

Computer simulation of mold filling and crystallization for a two-blade drill bit steel billet

Panchuk Vitaliy, Pavlo Prysiazhniuk, Tetiana Pryhorovska, Lubomyr Ropjak, Igor Kogut, Lubomyr Boruschak, Shulyar Iryna

ABSTRACT

This work presents computer simulation of mold filling and crystallization for a two-blade drill bit steel billet. Drawing-based models of a two-blade drill bit and its detachable casting mold were developed by SolidWorks. The developed solid model was transferred to the ProCAST program. The preliminary stages of a drill bit cast molding computer simulation were drill bit fillet and its casting mold materials specification, components contact surfaces creating, types of contact surfaces specification, heat conduction coefficients specification for each contact surface and boundary condition specification (melt temperature, pouring speed, pressure and weight). Cast mold filling process with steal 20XN (state standard 4543-71) was simulated. Casting crystallization was studied. Time-depend temperature distribution in the casting and molding were studied. The elastic-visco-plastic model was used for stresses distribution study into the casting. The metal molding was considered as an absolutely rigid body for calculation simplification. The highest residual stresses were observed in the grooves between drill bit blades. Means of residual stresses decreasing of a cast billet were proposed.

KEYWORDS

photovoltaic power generation, commutation overvoltage, digital relays

Consideration of the actual stage of nanomaterials used in dentistry

Pop Corina Monica, Pop Vadean Adina, Ioana Tașcu-Stavre

ABSTRACT

The present paper is meant to be a short presentation of the actual stage of nanomaterials used in dentistry. It shows some theoretical considerations regarding characteristics of some nanomaterials used in dentistry.

In recent years, increasing demands for dental reconstruction have led to the development of new materials that have multiple applications in dental medicine and which must meet aesthetic requirements, biocompatibility requirements as well as hardness or durability.

Surpassing the extraction period, dentistry has entered the "restorative era" in which it is desirable to introduce new materials that will lead to the most natural restorations with the physical and chemical properties closest to those of the dental tissues. The discovery of such materials, has become a definite necessity in order to achieve consistent progress in this respect.

Interest in using nanomaterials, composites with nanomaterials in restorative dentistry, as well as reconstruction, is constantly increasing. It is therefore important that the mechanical and other properties of these materials be carefully studied and especially improved.

The aim of this research is to help dentists, by analyzing and describing existing composite nanomaterials and by widening theirs area of use of in restorative dentistry, and improving their characteristics.

KEYWORDS:

nanomaterials; nanocomposites; biocompatibility; restorative dentistry

Characteristics of the Bologna Process Implementation at the Students from the Faculty of Engineering Hunedoara

Mihaela Popa

ABSTRACT

In order to access a Romanian academic performance at European level, it is necessary to reconsider integrated management within certain limits described by the Bologna Process. Although it has been over 15 years since the signing of the 1999 Bologna Declaration, we are still far away from being visible in the European Higher Education Area. On the basis of Law no. 288/2004, starting with the academic year 2005-2006, the organization of higher education started on the three cycles of study.

In this context, we must pay more attention to issues such as student-centered learning, promoting a quality culture in universities adapted to the labor market needs and, last but not the least, promoting a true partnership between the academic community and students, especially in terms of student involvement in decisions regarding the organization and content education.

All these aspects must be systematically considered beyond the logistical investment needs in the Romanian university infrastructure.

Starting from the premise that the Bologna Process facilitates the mobility of students, graduates and academic staff in the European space, it prepares students for career and active citizens life involved in society, being a support for personal development, the case study aims to highlight the impact of new regulations in European higher education in the student community of Faculty Engineering from Hunedoara.

KEYWORDS

Romanian higher education, Bologna Process, students, globalization, regionalization, mobility, academic reforms

Information literacy in Bosnia and Herzegovina

Dragana M Preradovic, Ljubiša Mićić

ABSTRACT

The use of the smart cell phones is a massive phenomenon and knowledge newer was so close, on one mouse klick or one screen touch. Young people usually adopt the new technology much faster than others groups of people and we assume that this group of people dispose with a broad range of IT skills. Of all different kind of IT skills we are interested in particularly the information literacy. The goal of this article is to identify the key marks of the information literacy in today's society and determine the level of information literacy at universities in Bosnia and Herzegovina. We are looking for answers like do todays students have a high information literacy level considering the availability of technology and knowledge. We also made distinguish between social network knowing level and information literacy level. The domain of our research is students population at universities in Bosnia and Herzegovina.

Migrant Crisis and Strengthening of the Right Wing in the European Union

Milijana Ratković

ABSTRACT

Migrant crisis, slow economic growth and growing disillusionment with the European Union led to strengthening of far-right parties that have achieved electoral success in a number of European countries. The collapse of the national economy has created a huge number of unemployed. New problems such as migrant crisis foster instability in the EU particularly due to the terrorist acts (Paris, Brussels) and other forms of violence (Cologne, Vienna) that involved migrants from the Middle East. What could represent the biggest problem is the ability of the European radical right parties to constitute on joint basis regardless different political backgrounds. The Alliance of European National Movements was formed in Budapest in 2009. Migrant crisis underlined divisions within the European Union, which led to the radicalization of European political scene.

KEYWORDS

migrant crisis, European Union, extreme right parties, immigrants

International Covenant on Economic, Social and Cultural Rights - protection of workers' rights

Rodic Vesna, Mihaela Popa, Mihaela Anamaria Lihet

ABSTRACT

The International Covenant on Economic, Social and Cultural Rights has been adopted and open to signature, ratification and accession by General Assembly resolution 2200A (XXI) of 16 December 1966. It entered into force on 3 January 1976 in accordance with Article 27. In the third part Article 6 of the International Covenant on Economic, Social and Cultural Rights explicitly states that all:

1) States Parties to the present Covenant "recognize the right to work, which includes the right of every person to the possibility of earning through freely chosen or accepted work, and take appropriate measures to preserve this right".

2) Among the measures that each member state of this pact should undertake to achieve this right in full include technical and vocational guidance programs and training, policies and methods for achieving permanent economic, social and cultural development and full productive employment in conditions that guarantee the enjoyment of human beings the basis of political and economic freedoms.

Mobing Phases

Rodic Vesna, Mihaela Popa, Mihaela Anamaria Lihet

ABSTRACT

According to Leyman, mobing has 5 development phases:

1) Conflict - As a potential basis of mobbing, there is an unresolved conflict among associates, which ultimately results in a disorder in interpersonal relations.

2) Aggressive Behavior - Pushed aggression escalates into a psychotherapist.

3) Involvement of management - In this phase of mobbing involves management. Unfortunately, management generally misjudges the situation.

4) Stigmatization of the victim - At this stage the victim is already characterized as "severe" or even "mentally disturbed" person. It becomes a "duty culprit" for all omissions in a work organization.

5) Exclusion of the victim from the workplace - After many years of exposure to terror, the victim suffers from chronic illness, disorder, eventually voluntarily or forcedly leaving work or even attempting self-service.

Impact of social marketing strategy on a small organization in the bakery industry

Rus Gabriel, A.D.Pop

ABSTRACT

The fact that small enterprises in general and small business in bakery industries in special, are organized and lead by a particular style of management, based on own experience and very often intuition where financial resources to run a strong marketing campaign are limited brought to our attention the concept of social responsibility which offers the chance to all the organizations to become competitive by oriented their strategy on social enterprises or innovative ideas based on the market demands of social needs, so they can get the support they need from the local community.

In this article we analysed an example of implementation of social marketing strategy done by a small organization from the bakery industry and we followed the grounds that the decision was based on, how this bakery decided to start a social marketing campaign, the steps during the implementation, the feedback from the local community on this initiative and the impact and results of this actions. All factors were analysed in direct relation with the financial implications of the project and the capacity of small organizations to implement social marketing strategies at this level.

This highlights the major results for the business when adopting this type of social concept. The analysis led to a significant improvement in the business profitability as well as the increase of the brand awareness in the community. This is why, the autors appreciates that the present study can be the basis for future studies of small organizations in various areas of work as guidance and best practice examples of succesfull implementation of social responsability strategies.

KEYWORDS

local development, social responsability, small organization, competitiveness, bakery industry

Using software quality models for the optimization of the business processes

Sabo Cosmin, Hajdu-Macelaru Mara Diana

ABSTRACT

Several software quality models have been developed, and the aim was to use them in the production so that it helps in delivering quality products. We will study how the implementation of a quality model helped the business process to improve. We will make a short review of the most used software quality models in production and how they optimize the business process.

KEYWORDS

software quality, software quality model, business process

Concept of the formation of scientific and educational informational space for design activities

Lesya Shkitsa, Volodymyr Kornuta, Olena Kornuta, Iryna Bekish

ABSTRACT

There has been formulated definition of scientific and educational information space of technical higher educational institutions in the conditions of modern development of information technologies (information environment). The information models of the scientific and educational process, role functions of participants, influences of new standards and design methods are described. The concept of scientific and educational information space for project activity is proposed.

The Increase of Energy Efficiency in Transport of Dangerous Goods Using Information System and Compatibility Database

Sinisa Dragutinovic, Dragan Nikolic, Masonicic Zoran

ABSTRACT

In this paper some results concerning fluid flow pattern and the evolution of flame propagation through unburnt mixture of two different hydrocarbon fuels in engine with strong macro flows were elucidated. Results presented in this paper were obtained by dint of multidimensional numerical modeling of reactive flows in very complex geometry of particular combustion chamber with four tilted valves. Flame propagation was represented by the evolution of spatial distribution of temperature in various cut-planes within combustion chamber while the flame front location was determined by dint of zones with maximum temperature gradient. The results presented are only a small part of broader on-going scrutinizing activity in the field of multidimensional modeling of reactive flows in combustion chambers with complicated geometries encompassing various models of turbulence, different fuels and combustion models. Fluid flow pattern and flame propagation for both fuels were obtained by dint of eddy-viscosity model i.e. with standard k-ε model of turbulence. The interplay between fluid flow pattern and flame propagation is entirely invariant as regards fuel variation indicating that flame propagation through unburnt mixture of CH4 and C8H18 hydrocarbon fuels is not chemically controlled but controlled by dint of turbulent diffusion.

KEYWORDS

Automotive Flows, Flame propagation, Combustion Modelling

The manure influence on Cr^{2+}, Cu^{2+}, Mg^{2+} and Zn^{2+} regime in the green waste compost

Smical Irina, Adriana Muntean

ABSTRACT

The composting is one of the most effective recycling method of green waste. The presence of some heavy metals as Cr^{2+}, Cu^{2+}, Mg^{2+} and Zn^{2+} may influence the compost quality. Thus, by adding some components like manure the micronutrients and heavy metals regime suffer changes which might influence their bioavailability for plant uptake.

The bioavailable and unavailable metal forms for plants determined by sequential analysis showed similarities in relation to the percentages of extracted forms. The lowest percentages were recorded for the bioavailable metal forms for plants uptake. Thus, the succession F6 >F5>F4>F3> (F1+F2) is characteristic for chromium, the succession F5>F6>F4>F3> (F1+F2) is characteristic for copper and zinc and the succession F5>F4>F6>F3> (F1+F2) is characteristic to the zinc and manganese. The research results show that the manure additives have a positive influence on the composting process.

KEYWORDS

green waste, compost, manure, heavy metal

Strategies for Development and Revitalization of Romanian Rail Sector

Stet Mihaela

ABSTRACT

This paper proposes new models and possible strategies for revitalization of Romanian railways. Based on the analysis of the issues of rail infrastructure, freight and passengers transportation, there have been identified solutions for future direction in order to solve the main problems of this sector. There have been analysed, also, various financing forms of rail infrastructure and superstructure, infrastructure charging, the potential of public-private partnerships at local, regional and national level, in the development of railways.

KEYWORDS

transport, railway, freight, infrastructure, passengers

Demographic Factors and their Impact on Economic Development of Bosnia and Herzegovina and the Republic of Srpska

Milan Šušić

ABSTRACT

The subject of the research are the demographic changes determined by the changes that have occured in the technical, technological, economic, social, health and cultural development of Bosnia and Herzegovina and its entities. The aim of the research is to define the concepts needed for understanding the process of demographic aging and to explore the demographic trends in Bosnia and Herzegovina and the Republic of Srpska. The paper analyses the impact of demographic factors on socio-economic development: a) total population movement (change in the population number, dynamics coefficient); b) (un) employment; c) movement: 1) natural (natality, mortality), 2) mechanical (emigration, immigration); and d) demographic structure (gender representation, education index ..). The contribution of the research consists in determining the economic and social consequences of the demographic processes. Socio-economic development must begin with local and regional self-government. Every urban and rural area in Bosnia and Herzegovina and the Republika Srpska must lead an adequate development policy, focus on its strengths and potentials and turn weaknesses into advantages. This ensured, it is necessary to set clear and realistic goals that can be realized in an optimal time frame. Consequently, families will not have the need for emigration, as such places will become desirable for life and development.

KEYWORDS

economy, population, demographic processes, development, fertility

Fixed point approximation for asimptotic pseudocontractive mappings using admisible perturbation operator

Cristina Ticala

ABSTRACT

The aim of this paper is to establish some convergence theorems for a Krasnoselskii type fixed point iterative method defined by means of the concept ofadmissible perturbation introduced in [Rus, I. A., An abstract point of view on iterative approximation of fixed points, Fixed Point Theory 13 (2012), No. 1, 179–192] for an asymptotically pseudocontractive operator defined on a convex closed subset of a Hilbert space.

Discussing about Intercultural Communication Competence in ESP

Luminița Todea, Anamaria Fălăuș, Ramona Demarcsek

ABSTRACT

Nowadays, the rapid growth and globalization of worldwide workforce have strengthened the perception that English is the lingua franca of international professional communication. Success in business and technology depends on people's ability to communicate at a personal and professional level beyond linguistic and cultural boundaries; implying their communicative competence, intercultural competence and cultural awareness. Courses in foreign languages for specialized purposes must enable university students to interact efficiently in contexts that they are likely to face in their future careers. Therefore, the purpose of our paper is to identify and discuss the level of intercultural competence in terms of knowledge, skills and attitudes among ESP students.

KEYWORDS

ESP, professional communication, intercultural communication competence, cultural awareness

Dielectric properties of pulsed laser deposited nanoscale $CeNi_5$ films

Todoran Daniela, Radu Todoran, Zsolt Szakacs

ABSTRACT

Electronic properties of pulsed laser deposited, nanoscale CeNi5 alloy layers, on a dielectric substrate are described using the complex dielectric function. This spectral behaviour is studied separately for the real part ε1 (the dielectric constant or dielectric permittivity) and imaginary part ε2 (the dielectric loss function) of this function. The layers were obtained from grinded bulk powder [1] using short, modulated laser pulses [2]. The XRD pattern of the bulk was used for structural determinations and phase quality check. The absolute reflectance of the obtained alloy was determined at the 632.8 nm laser wavelength, of a liquid nitrogen cooled and stabilized He-Ne source, which. This value was further used to renormalize the relative differential reflectance spectroscopy measurements from the UV-Vis-NIR domain. The final absolute reflectance spectra, over the above-mentioned domain, was processed using the Krames-Kronig formalism [3,4], so that the two parts of the complex dielectric function were computed. The behaviour of the displayed spectral inflexion points, studied using appropriate theoretical considerations, explains the variation of the dielectric functions. This way one determined the electron energy density functions and the shape of the energy bands together with their variation with the layer thickness and deposition substrate.

KEYWORDS

$CeNi_5$ nanoscale films, UV-Vis-NIR specular reflectance spectroscopy, Kramers-Kronig formalism, electronic energy bands

Criminal-Legal Aspects of the abuse of official position or power

Suzana Ubiparipović

ABSTRACT

The globalization process has increased corruption offenses, among which the crime of the abuse of official position or power is one of the most relevant ones since it has undergone significant changes to comply with the new Criminal Law of the Republic of Srpska. This offense appears when an official or a responsible person gains a personal benefit or benefit for others, causes damage or seriously violates another's rights by using the official position or dereliction of official duty. Based on the legal provisions and on the research of a number of court judgments, this paper analyses the basic elements of this criminal offense regarding the forms of enforcement, the characteristics of the perpetrator, the consequences of the act and guilt, as well as aggravated crimes in accordance with innovations in the criminal legislation of the Republic of Srpska.

KEYWORDS

an official position, an official person, a responsible person

Akreditacija Lboratorija Metaloprerađivačke Industrije

Vuković Veljko, Ljubica Šukalo, Dejana Ižaković

ABSTRACT

U ovom naučnom rada naznačena je definicija samog pojma akreditacije kao i svih neophodnih funkcija koje laboratorija za metaloprerađivačku proizvodnju mora posjedovati da bi se mogla akreditovati. Navedne su osnovne smjernice i proces akreditacije laboratorija za metaloprerađivačku proizvodnju. Navedeni su osnovni elementi standarda koje je neophodno ispoštovati kako bi laboratorija mogla učestvovati u Sistemu akreditiranja u BiH kao i Standard EN ISO/IEC 17025:1999 (EN ISO/IEC 17025:2004).

KEYWORDS

akreditacija, kvalitet, etaloniranje i ispitivanje kompetentnost

On Embedded Hypercubes in Extended Fibonacci Cubes

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ABSTRACT

An important aspect of a distributed system regards the design of the communication subsystem meaning the design of its interconnection network. The design of the interconnection network suppose a compromise to achieve some objectives as: high transfer rate, small communication delay, simplicity, scalability, optimal rapport cost/performance. An interconnection network can be seen as a finite graph with the vertices representing the nodes of the network that is processing elements, and the edges corresponding to the communication links. The properties of a network can be studied using combinatorics and graph theory.

The hypercube network is one of the most efficient interconnection network used for parallel computation. Its great popularity is due to modularity, symmetry, low diameter and good fault-tolerance. The hypercube is also well suited for efficient simulation of other networks.

A number of “hypercube-like” topologies, cube connected cycles, de Bruijn, star-graph, pancake graph have been studied. The Fibonacci Cubes and Extended Fibonacci Cubes, are two topologies based on the sequence of Fibonacci numbers. These topologies provide good properties for an interconnection network regarding diameter, node degree, recursive decomposition, embeddability, communication algorithms and strong recursive structure. The Fibonacci Cubes and Extended Fibonacci Cubes are subgraphs of hypercubes, induced by vertices represented by Fibonacci or extended Fibonacci numbers.

In this paper we study the number of disjoint subgraphs isomorphic to hypercubes that can be embedded in Extended Fibonacci Cubes.

Analysis of Srebrno Jezero Wind Energy Potentials

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ABSTRACT

The main goal of this paper was to obtain all acceptable locations for siting of wind turbines in the region of Srebrno jezero lake, near the Danube river, near the borders with the neighbouring Republic of Romania and Republic of Bulgaria. Total of 10 locations for sitting of 2MW wind turbines were accepted. The estimations were obtained using the WAsP simulation software. Final results are compared by means of the quality and quantity of the wind data and capacity factor. Finally, the preliminary economical analysis of the acceptabillity of the installing of wind turbines was done.

KEYWORDS