

Forming Engineers for a Growing Demand

Book of Abstracts

**March 03 - 06, 2013
Luanda, Angola**

**Edited by
Claudio da Rocha Brito
Melany M. Ciampi**



Science and Education
Research Council

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Research Council**

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Message from the General Chair



Once more I have the grateful task to welcome all the participants and cooperators from around the world of **ICECE - International Conference on Engineering and Computer Education**. This edition **ICECE'2013** happens in Luanda, the capital city of Angola, on **March 3 to 6, 2013** and it is the first time that **ICECE** happens in African Continent.

The theme of the congress is: "**Forming Engineers for a Growing Demand**". Using this platform we aim to continue the success of past congresses in supporting the dissemination of quality research, but also to provide memorable experience through our hospitality, location and congress facilities.

Located on the west coast of Africa, the port of Luanda is the capital and largest city of Angola. Founded by the Portuguese in 1575, the City had a tumultuous history, finally reaching peace in 2002, after a long civil war. With the increasing population and the wave of construction, the city is experiencing a renaissance. It is certainly a perfect place for the accomplishment of a congress as ICECE once Angola is also a growing economy country.

The ideas, opinions and professionals contributions are showed in lectures with international specialists in their areas of performance, plenary sessions, and presentations of works and workshops of high quality.

As the General Chair of **ICECE'2013 – VIII International Conference on Engineering and Computer Education**, on behalf of **COPEC** team I am glad to thank first of all the **Jean Piaget University of Angola** for hosting the congress. It is imperative to acknowledge and thank in special all the people involved in the organization of this edition of **ICECE** such as the **Rector Prof. Pedro Domingos Peterson**, Local Chair of **ICECE'2013**, without whom this event would not have been possible. I would like also to thank **Prof. Lufianliso Antonio**, Dean of Engineering and Technology School and **Prof. Carlos Cunha** for their great work.

The **ICECE'2013 - International Conference on Engineering and Computer Education** is organized by **COPEC – Science and Education Research Council** in Technical Cooperation (in alphabetical order): AAMP (Fishing Museum Friends Society), ABENGE (Brazilian Society for Engineering Education), AENUI (Asociación de Enseñantes Universitarios de la Informática), ASEE (American Society for Engineering Education), ASIBEI (Ibero-American Association of Engineering Education Institutions), GCMM (Global Congress on Manufacturing and Management), IEEE-Ed.Soc. (Education Society of the Institute of Electrical and Electronics Engineers), IFEES (International Federation of Engineering Education Societies), IGIP (Internationale Gesellschaft für Ingenieurpädagogik), INTERTECH (International Council for Engineering and Technology Education); IPN (Ingeniøruddannelsernes Pædagogiske Netværk), ISTECH (Ibero-American Science & Technology Education Consortium), Porto Gente (PortFolk), RBE (Brazilian Network of Engineering), RCI (Réseau Carthagène d'Ingénierie), SBA (Brazilian Automation Society), SBA Young (Student Chapter of the Brazilian Automation Society), SEFI (Société Européenne pour la Formation des Ingénieurs), SHERO (Safety, Health and Environment Research Organization), SPEE (Portuguese Society for Engineering Education), SPEED (Student Platform for Engineering Education Development) and WCCA (World Council on Communication and Arts).

I have to thank in special our sponsors FAPESP (State of São Paulo Research Foundation), CNPq (National Council for Scientific and Technological Development), CAPES (Coordination for Improvement of Personnel of Superior Level) and SUPNET - Technology & Information.

For all the authors and participants thanks for their significant collaborations and willing to share their contributions, for the development of science and technology in their fields of expertise.

I am very glad to welcome you to **ICECE'2013**.

Thank you all

Prof. Dr. Claudio da Rocha Brito
GENERAL CHAIR
President of COPEC

Message from the Technical Program Chair



It has been a pleasure to be the Technical Program Chair of **ICECE'2013 – VIII International Conference on Engineering and Computer Education**. It is the 8th edition of **ICECE** and along these years it has been a success always providing a high quality congress for the international scientific community.

ICECE'2013 counts with the collaboration of many researchers and professionals whose works in the fields of interest have contributed for the discussions and the proposition of solutions that are so important for the sustainable development of our contemporary society.

The local of the event, the city of Luanda, in Angola is a place where nature is stunning and with kindness people; a country with a lot of history and a promising future. Equally the University - **Jean Piaget University of Angola** is a perfect environment for the accomplishment of such scientific event.

It is important to point out the work of the reviewers who diligently have dedicated time and efforts for the revision process. Equally important are the contributions of workshops leaders and plenary session's lecturers bringing interesting topics related to the theme "**Forming Engineers for a Growing Demand**".

On behalf of the Technical Program Committee of **ICECE'2013** I would like to thank all the people involved in the Congress and hoping that everybody enjoys it.

Thank you all

Prof. Dr. Melany M. Ciampi
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Forming Engineers for a Growing Demand

Program

**March 03 - 06, 2013
Luanda, Angola**

**Edited by
Claudio da Rocha Brito
Melany M. Ciampi**



Science and Education
Research Council

ICECE'2013– PROGRAM AT GLANCE

Time	Sunday 03	Monday 04	Tuesday 05	Wednesday 06	Time	
8:30 am 9:00 am	Free	Registration	Registration	Registration	8:30 am 9:00 am	
9:00 am 9:30 am		Opening Session	Technical Sessions	Workshop	9:00 am 9:30 am	
9:30 am 10:00 am		Plenary Session			10:00 am 10:30 am	
10:00 am 10:30 am		Coffee Break	Coffee Break	Coffee Break	10:30 am 11:00 am	
10:30 am 11:00 am					Technical Sessions	Technical Sessions
11:00 am 11:30 am		11:00 am 11:30 am				
11:30 am 12:00 pm		11:30 am 12:00 pm				
12:00 pm 00:30 pm		12:00 pm 00:30 pm				
00:30 pm 1:00 pm		Registration	Lunch	Lunch		00:30 pm 1:00 pm
1:00 pm 1:30 pm						1:00 pm 1:30 pm
1:30 pm 2:00 pm	1:30 pm 2:00 pm					
2:00 pm 2:30 pm	2:00 pm 2:30 pm					
2:30 pm 3:00 pm	Cultural Session	Technical Sessions	Technical Sessions	Free	2:30 pm 3:00 pm	
3:00 pm 3:30 pm					Coffee Break	Coffee Break
3:30 pm 4:00 pm		Technical Sessions	Technical Sessions			
4:00 pm 4:30 pm					4:00 pm 4:30 pm	
4:30 pm 5:00 pm		4:30 pm 5:00 pm				
5:00 pm 5:30 pm		5:00 pm 5:30 pm				
5:30 pm 6:00 pm	Cocktail Party	Free	Closing Session	5:30 pm 6:00 pm		
6:00 pm 6:30 pm			Free	6:00 pm 6:30 pm		
6:30 pm 7:00 pm				6:30 pm 7:00 pm		
7:00 pm 7:30 pm			7:00 pm 7:30 pm			
7:30 pm 8:00 pm	Free	Banquet (for adhesion)		7:30 pm 8:00 pm		
8:00 pm 8:30 pm				8:00 pm 8:30 pm		
8:30 pm 9:00 pm				8:30 pm 9:00 pm		
9:00 pm 9:30 pm				9:00 pm 9:30 pm		
9:30 pm 10:00 pm				9:30 pm 10:00 pm		

SESSION AND PRESENTATION CODES

Codes are used to determine when and where a paper is presented.

Technical Session Coding

A four- character designator is associated with each technical session, as in **LDTN**

Where:

L – is a letter that designates the language of the session:

- E – designates English sessions and papers;
- P – designates Portuguese sessions and papers;
- S – designates Spanish sessions and papers.

D – is a letter that designates the day of the session:

- M – designates Monday sessions and papers;
- T – designates Tuesday sessions and papers;

T – is a number that designates the time slot for the session:

- 1 is early morning (9:00 am - 10:30 am);
- 2 is late morning (11:00 am - 12:30 pm);
- 3 is early afternoon (2:30 pm - 4:00 pm);
- 4 is late afternoon (4:30 pm - 6:00 pm);

N – is a letter that designates the parallel session within any time slot.

A is the first parallel session; E is the fifth parallel session, etc.

Note.

Five minutes will be allowed for introductions and instructions at the beginning of each session. Each paper will be given 10 minutes for the total presentation, with two minutes for questions. All papers will start in 12 – minutes increments to allow conference attendees to “session hop” hear papers of interest. If there is a no-show author in a session, a 12 - minutes break will be called. **Papers will not be moved up in sessions.**

Papers times for sessions are shown below. (H is a letter that designates hour of the day).

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Third Paper	H:29	H:59
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Session Ends	(H+1):29	(H+1):59

Sunday – March, 03

**6:00 PM – 8:00 PM
COCKTAIL PARTY**

All the participants are welcome to join us for the “Cocktail Party” on Sunday at 6 pm. It is the opportunity to get in touch with other colleagues and make new friends in a pleasant historical and cultural environment.

Monday – March, 04

8:30 am – 5:30 pm
REGISTRATION

9:00 am – 9:30 am
OPENING SESSION

Chair: **Prof. Dr. Claudio da Rocha Brito** – General Chair of ICECE'2013
Prof. Dr. Melany M. Ciampi – Technical Program Chair of ICECE'2013

Prof. Dr. Pedro Domingos Peterson – Local Chair of ICECE'2013 and Rector of Jean Piaget University of Angola

9:30 am – 10:30 am
PLENARY SESSION

Chair: **Prof. Dr. Claudio da Rocha Brito** – President of COPEC
FORMING ENGINEERS FOR A GROWING DEMAND
Speaker: **Prof. Dr. Melany M. Ciampi** – President of SHERO

10:30 am – 11:00 am
Coffee Break

11:00 am – 12:30 pm
TECHNICAL SESSIONS

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Chairs

Walter W. Buchanan
Clara Amelia de Oliveira

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Chairs

José Carlos Rodrigues de Oliveira

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8:30 am – 5:30 pm
REGISTRATION

9:00 am – 10:30 am
TECHNICAL SESSIONS

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Chairs

Clara Amelia de Oliveira
Joni de Almeida Amorim

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CLOSING SESSION

Chair: **Prof. Dr. Claudio da Rocha Brito** – General Chair of ICECE'2013

Prof. Dr. Melany M. Ciampi – Technical Program Chair of ICECE'2013

Prof. Dr. Pedro Domingos Peterson – Local Chair of ICECE'2013 and Rector of Jean Piaget University of Angola

8:00 pm – 11:00 pm

THE BANQUET

Farwell dinner is a way to close the successful event accompanied by the colleagues in a nice and beautiful environment. The tickets will be available at the reception desk.

Wednesday – March, 06

**8:30 AM – 11:30 PM
REGISTRATION**

**9:00 AM – 12:30 PM
WORKSHOP**

**OBJECT-ORIENTED TOOL APPLIED ON ENGINEERING AND INFORMATICS EDUCATION - HOW TO IMPLEMENT
COMPLEX PROJECTS AT BEGINNER'S LEVEL**

Prof. Dr. Clara Amelia de Oliveira – INE- CTC - Federal University of Santa Catarina, Florianópolis, SC, Brazil

Forming Engineers for a Growing Demand

Abstracts

**March 03 - 06, 2013
Luanda, Angola**

**Edited by
Claudio da Rocha Brito
Melany M. Ciampi**



Plenary Sessions

FORMING ENGINEERS FOR A GROWING DEMAND

Claudio da Rocha Brito, Melany M. Ciampi

At university level the impact of present world scenario is pushing to the necessity of a different professional. In engineering and computing fields, thanks to the several researches carried out by scientists many actions have been applied successfully. Communication technology helps the acquisition of knowledge for a large number of people, which is very positive because it opens opportunities for those who are interested in get pace with the challenging mutant world of global economy. The discussions and development of projects and conferences are the best places not only for idea exchange but also the opportunity to make contacts for future work. ICECE - International Conference on Engineering and Computer Education is a conference that for almost 15 years has been providing a breeding soil for discussions and solutions for engineering and computer education worldwide. This paper aims to describe the evolution of ICECE.

Session EM2A

REGRESSION ANALYSIS APPLIED TO TIME SERIES ON SUSPENDED AND SETTLEABLE SOLIDS TRANSPORTED IN AN URBAN RIVER IN BRAZIL

André Luiz de Lima Reda, Daniel Massashi Uehara, Claudio da Rocha Brito, Victor Freitas de Azeredo Barros

Solids transport by river waters bears diurnal oscillations caused by the production regime of solid matter, and hydrodynamic fluctuations of fluvial regimes. Diurnal variation patterns were identified for different types of sediment concentrations on a river crossing the Greater São Paulo, Brazil, subject to strong diurnal seasonality (sanitary and industry discharges contain solids). Two dry-weather campaigns were conducted (July-2006; June-2007) in order to provide a considerable data basis, at every two hours. A strong correlation resulted between serial extremes (local maxima and minima) of settleable solids, on the one hand, and suspended solids, on the other. Conclusions were: similar efforts to recognise diurnal patterns on urban river solids transport shall continue (so helping to plan future monitoring campaigns); similar care must apply when monitoring transient events due to heavy storm. Also, a settling/ressuspension oscillatory mechanism was noticed on settleable solids due to fluctuations in river hydrodynamics.

OBJECT-ORIENTED MODELING TOOL AND INTEGRATIVE VIEW IN EDUCATION

Clara Amelia de Oliveira, Wilfred Fritz, Deon Kallis, Ilias Omar

The present paper presents concepts from integrative view in education under Object-Oriented tool perspective. Complex approach principle embeds relevance of knowledge under thematic view in Informatics and Engineering education. Practical examples extracted from UFSC University (Brazil) and CPUT (South Africa) show potentiality of changes in technological education through Object-Oriented modeling tool associated with Thematic broad view. Definition of generality of problems under real world focus is a core aspect to increment outcomes. Object-Oriented tools weds, harmonic way, with complex view in terms of new knowledge approach. In addition, pedagogic practices are suggested to enhance potentiality of results under integrative view in education.

SOCIO-TECHNICAL SYSTEM DESIGN: A GENERAL SYSTEMS THEORY PERSPECTIVE

M. Kudret Yurtseven, Walter W. Buchanan

Here we intend to study the idea of socio-technical system design from a General Systems Theory (GST) perspective and develop a general framework for the design process. The study is organized around the basic ideas and the principles of GST, Cybernetics and Cognitive Systems Engineering (CSE) - two of the major trends in GST. Due to the multidisciplinary nature of GST, hence Cybernetics and CSE, the proposed design procedure includes technological, economic, and behavioral dimensions. Cybernetics provides a structural framework and helps designers to program all the activities required for control and communication. CSE, on the other hand, primarily guides designers in modeling human-machine relationships. Consequently, the design process is modeled as a socio-technical construct, integrating technical, human, organizational, economic and cultural attributes of the system. GST provides a strong theoretical context, making the framework adoptable in diverse fields, including process, manufacturing, and service industries.

PRISM PROJECT: FOSTERING GREEN ENERGY INDUSTRY TRAINING

Ali Mehrabian, Walter W. Buchanan

The green energy industry has emerged as a growing industry over the last few years. Economic demands for green energy push for skilled engineers and people with technical skills and proper training in these areas to fulfill the forecasted job growth in these sectors. The birth of the PRISM project is to present and provide the training opportunities in solar energy, fostering a green energy industry training center. PRISM Project is a \$238,000, NSF funded training project for three years, centered at Daytona State College in Daytona Beach. Its goal is to provide entry level and short-duration training in photovoltaic and solar energy. The training program curriculum is designed with the objectives that the graduates of the program are equipped with the basics knowledge in photovoltaic energy production basic theories, installations, and troubleshooting. Here is discussed PRISM project and its successes in training and collaborating with the green energy industry.

IMPLEMENTATION OF SUSTAINABLE CONSTRUCTION BASICS IN A CONSTRUCTION MATERIALS AND METHODS COURSE

Ali Mehrabian, Walter W. Buchanan

The field of construction demands educated personnel in green and sustainable construction. With the recent trends in the industry, many clients demand more green materials and design and an overall sustainability to achieve a cleaner and safer structures. The LEED certification has also attracted much attention. Here a case of successful implementation of “green module” into a construction material and method course at the bachelor’s level is presented. Discussions include curriculum flexibility and constraints reflected by the addition of the green modules. The module discussed here is developed according to the state-of-the-art body of knowledge and is consistent with educational program outcomes of the course and that of the educational program. The more comprehensive course can be delivered online or using hybrid modes of instructional delivery. The follow-up empirical assessment of green modules shows that they are well received by the students and their reflective employers, indicating a successful implementation.

FUTURE TOPICS FOR ENGINEERING AND ENGINEERING TECHNOLOGY CURRICULA

Walter W. Buchanan, M. Kudret Yurtseven, Ali Mehrabian

Here is presented future topics for engineering and engineering technology curricula. Socio-technical system design is given with a general systems theory perspective. Studied is the idea of socio-technical system design from a General Systems Theory (GST) perspective and developing guidelines for the design process. Next a prism project fostering green energy industry training is discussed. Industrial demands for green energy for trained and skilled engineers with technical skills and proper training in these areas to fulfill the forecasted job growth in these sectors is essential. The birth of the PRISM project is to present and provide the training opportunities in solar energy fostering a green energy industry training center. Finally an implementation of sustainable construction basics in a construction materials and methods course is covered. The LEED certification and training have attracted much attention. Here a case of successful implementation of “green module” into a construction material course is presented.

MODELING E-GOVERNMENT FOR EMERGENT COUNTRIES: CASE OF S. TOME AND PRÍNCIPE

Artur Celestino Vera Cruz, Luis Amaral

E-government is assumed nowadays as a common and transversal preoccupation to all the modern states. Therefore, in spite of having several methods for planning of the Information Systems, the specificity of Public Administration imposes the need to think in modeling of a method for global planning. This research provides a reflection on how to conduct and implement an e-government initiative in emergent countries, with special focus on the case of São Tomé and Príncipe.

PATTERNS OF LECTURE NOTES USAGE

Oswaldo Clua, María Feldgen, Adrian Muccio

In the classroom students should be engaged in educational experiences and actively synthesizing new information. Note taking is a pervasive activity frequently used to help student learning. However, large lecture classes may contain several drawbacks including a general lack of engagement amongst students, increased distractions, and challenging visual and audio characteristics. In such an environment, it is not a surprise that some students can't develop effective learning strategies by themselves while others are very successful in this subject. Teachers usually provide in advance some course material such as slides or notes to help students in their learning-strategy building process. In this paper we present a theoretical model of note taking. We used this model to develop the style of the notes we made available to students. After a brief description of the Operating System course to understand the environment we present and discuss our findings on the correlation between supplemental material use and grades.

Session PM2A

A MODEL OF LEARNING OBJECT CENTERED ON THE PROCESS TEACHING-LEARNING

Thiago Reis da Silva, Rommel Wladimir de Lima, Carla Katarina de Monteiro Marques, Hugo Henrique de Oliveira Mesquita, Roberto Douglas da Costa, Rodrigo Medeiros de Azevedo, Selma Márcia Pontes Teixeira da Rocha

This article presents the advantages of modeling a Learning Object using the SCORM standard, based on tools centered on the teaching/learning based on pedagogical theories and statements. For this, the teaching tools: Map Content and Dependency Map, which is developing a methodology for planning disciplines, are thought of as models for learning objects. Thus, the representation of these tools as Learning Objects enables its greater sharing and reuse.

APPLICATION OF A DATA VISUALIZATION TECHNIQUE BASED ON TREES TO AID PRIORITIZATION OF REQUIREMENTS IN AGILE PROJECTS

Fábio Abrantes Diniz, Thiago Reis da Silva, Diego Grosmann, Ithalo Bruno Gregório de Moura, Francisco Milton Mendes Neto, Pedro Fernandes Ribeiro Neto

The practice of requirements prioritization involves the recovery analysis of each requirement by customers and requirements selection that will be implemented in a specific version of the system. Wrong choices during requirements prioritization may affect the system quality and thus its acceptance by customers. Within this context, some practices of requirements prioritization have been addressed in agile projects to improve the requirements prioritization stage. Among them, there is a practice based on Kano technique, which uses the agile development methodology Scrum in software projects. However, the resulting data from Kano practice produces much textual information, which is difficult to be viewed and analyzed in order to determine the real importance of each requirement. Therefore, this paper proposes a data visualization technique based on "TreeMaps" in order to assist in the viewing results of the Kano technique.

USING THREE-DIMENSIONAL VISUALIZATION TECHNOLOGY FOR THE DETECTION OF BURIED PIPELINES IN UNSTABLE AREAS

Robson da Cunha Santos, Marcelo Silva, Gerson Gomes Cunha

The process of construction of pipeline systems, the companies have to install pipes through regions with complex geology and morphology. These regions can present aspects of geological and geotechnical risks, which can compromise the structural integrity of the pipes, by movement of the solids and interaction between soil and pipe. It was created a system capable of evaluate this regions based on digitalized data of aerial photographs (orthophotos), coordinates of control instruments and on ground topography. The system consists of three-dimensional environment (3D) using techniques on virtual reality (VR) was developed, to support the analysis of existing problems. The system is completely geo-referenced, which permits define adequate solutions for the projects as well as avoiding problems for some specific areas. In addition, the system permits interaction with specialists, enabling them to indicate directly on the 3D images, the risk aspects for further evaluation in situ and for taking adequate decisions.

USING INTELLIGENT AGENTS WITH EDUCATIONAL GOALS IN PERSONALIZED RECOMMENDATION OF CONTENT IN VIRTUAL LEARNING ENVIRONMENTS 3D

Ithalo Bruno Gregório de Moura, Francisco Milton Mendes Neto, Paulo S. M. Sousa, João de D. Lima

Virtual environments in three dimensions (3D) provide a wealth of detail, sense of immersion and interaction with various features. A virtual museum, from its 3D virtual platform and the resources it can offer, works as an efficient educational tool as it provides information to its visitors in a simplified. However, a limitation of the use of virtual museums for learning is that these environments do not take into account the individual and contextual characteristics of each visitor, considerably limiting their learning experience and navigation. Thus, this paper presents a 3D virtual museum, whose differential is recommendation personalized of content. To achieve this goal, we used intelligent agents and ontologies for perform satisfactorily the recommendation.

SENG2D: PLATAFORMA E VISUAL INTERATIVA DE ENSINO-APRENDIZAGEM EM ENGENHARIA - EQUILÍBRIO EXTERNO 2D (MÓDULO I)

Gilberto Gomes, Ana C. F. Lima, Rodrigo M. Vivas, Rodrigo D. Milhomem, Alisson C. Sousa

Allying the interactivity computing environments and conducting practical activities in academic disciplines is an important complement the theoretical part of these, besides giving students the understanding and fixing of concepts learned. Thus, the concepts communicated in lectures in an interactive and visual between teacher and students and associated with situations abstracted from reality, makes the classes more productive and motivating. On the other hand, Computer Graphics has proved substantially as important support tool in the development of computer programs and interactive communication as a vehicle for teaching purposes. Thus, this paper presents the development of an interactive visual-Computing Platform, written in JAVA, enabling closer and address the problem of physical form as real as possible, as well as assist learning and understanding the External Equilibrium in two dimensions. Application examples illustrate and validate the platform.

AUTOMAÇÃO DE RESIDÊNCIAS ATRAVÉS DE MÓDULOS INDEPENDENTES E TECNOLOGIA BLUETOOTH COM INTERFACE GRÁFICA EM PLATAFORMA ANDROID

Robson da Cunha Santos, Matheus de Paula Medeiros

The project involves the creation of hardware and software for a home automation system. The main characteristics of the system consisting of modularity and low cost. The system is composed of small modules that are located in different parts of the residence, has the ability to control different devices and remotely communicate with Bluetooth devices by drivers. These devices can be Tablets, Smartphones, Laptops, etc.. Each module is capable of controlling electrical devices connected to it by direct user command and ability to perform routine pre-programmed by the user, ie, control parameters based devices, the data read from the sensors connected to the module. The graphical interface is based on programming platform using open source Android, making it more practical to use the application. The ability of automatic control and ease of interface can bring more comfort to the residents and even reduce electricity costs.

ROBÓTICA E PROGRAMAÇÃO JAVA NA ELABORAÇÃO DE VEÍCULOS CONTROLADOS REMOTAMENTE COMO NOVA TECNOLOGIA DE ENSINO

Robson da Cunha Santos, Marcelo Silva, Gerson Bartholo de Alcântara, Júlio Cesar Paiva Ribeiro, Iorran M. de Castro, Matheus da C. Silva, Rafalel R. d'Almeida, Rafael P.de Souza

This Project is an application of robotic, electronic and Java programming to preparation of vehicles controlled remotely to instigate the creativity of the new students, involves teachers and students of engineering and information system of the University Estácio de Sá. Is divided into high technology study used in robotics to educational goals, basics commands of electronic and programming language of high level Java. Robotics, automation and programming are used in this development as a new learning of the new technology allowing more access to scientific knowledge and arouse news talent. The project develops prototypes of vehicles to detecting ferrous material buried. Another technology used to prototype is the Arduino platform responsible to automation, control, flexibility and ease. These technologies are easy to understand making the concept quite clear and succinct, motivating and innovating the way of learning students, directly and indirectly involved in the project.

UM SISTEMA DE RECONHECIMENTO FACIAL APLICADO A UM AMBIENTE VIRTUAL DE APRENDIZAGEM COMPOSTO POR AGENTES PEDAGÓGICOS

Fábio Abrantes Diniz, Francisco Milton Mendes Neto, Francisco das Chagas Lima Júnior, Laysa Mabel de Oliveira Fontes

Currently, most of Learning Virtual Environments (VLEs) has no efficient mechanisms that can identify students access to both the system and during the development of their activities. In general, this type of system adopts the use of security mechanisms for authentication and login password. The use of this simple type of authentication increases vulnerability to fraud as to the identity of that which carries the course. Based on this context, this work presents a face recognition system based on techniques of Principal Component Analysis and Autofaces, and investigates their accuracy in identifying the student during the entire course in an VLE. The results show an accuracy exceeding 90% in the identification of student achievement throughout the course in VLE consists of pedagogical agents.

Session EM3A

GENERAL SKILLS LEARNING IN “ORAL AND WRITTEN EXPRESSION” IN ENGINEERING USING A TABLET

Begoña García Zapirain, Amaia Méndez Zorrilla, J. Oliver Bernal

After the Bologna Agreement most universities experienced great changes not only in the e-learning (teaching learning) model, but also in the competences the students are trained with. This article presents an example of the generic competence work “Oral and Written Skills” within the frame of a technological subject “Theory Of Communication” through the didactic resource “Tablet”. The student will not only work that competence by using habitual tools like power point, but also with new futuristic and interactive devices. The combination of resources, the body language dominance and the quality of speech are valued. The assessment has been accomplished through tests to the attendees.

SOFTWARE TOOL USING DIFFERENT METHODS FOR ANALYSIS AND PROCESSING EEG SIGNALS IN BIOMEDICAL AND MEDICINE STUDIES

Aitor Santos Ortuzar, Begoña García Zapirain, J. O’Toole, Amaia Méndez Zorrilla, Ibon Ruiz Oleagordia

Electroencephalography is the recording and evaluation of electrical potentials generated by the brain and obtained through electrodes placed on the scalp surface. The signal monitoring is a basic tool for some applications in clinical medicine. Specifically, quantitative analysis of the electroencephalogram (EEG) to understand brain function in order to aid in the diagnosis of dysfunctional states in disciplines such as Neurology, Neurosurgery, Psychiatry, Psychology and Pharmacology. "Deustotech EEG Digital Processing Toolbox" provides an interactive graphical user interface (GUI) allowing users to flexibly process various brain signals. This software integrates different filtering options, including a range of analytical methods used in functional connectivity.

SOFTWARE TOOL USING DIFFERENT METHODS FOR ANALYSIS AND COMPARING FMRI SIGNALS IN BIOMEDICAL AND MEDICINE STUDIES

Alejandro Basterra Echeberria, Begoña García Zapirain, Amaia Méndez Zorrilla, Ibon Ruiz Oleagordia, B. Fernandez de Ruanova, Ibone Saralegui, Alberto Cabrera

Within the bunch of analysis which can be done using neuroimaging derived from fMRI, brain connectivity is one of the most outstanding one. These studies can be split in functional connectivity or statistical relations between regions of the brain and effective connectivity, which looks for causal dependencies. “DeustoTech Brain Connectivity Methods” consist of a MATLAB based toolbox which provides a whole framework for exploring a set of mathematical methods imported from other fields for being applied in brain connectivity. This software integrates functions and atlas regions for extracting BOLD signals from fMRI images and band-pass filtering options for removing artifacts. The methods for connectivity analysis this toolbox works with, are basically divided into two groups: phase synchronization and effective connectivity methods. Along with the visualization options it offers, this toolbox is a great starting point for those who want to learn more about the newest applications of signal processing in neuroscience.

USING INTERACTIVE WHITEBOARD FOR INTERACTIVE EDUCATION IN THE FIELD OF TV AND VIDEO SYSTEMS

Amaia Méndez Zorrilla, Begoña García Zapirain

In last years, the way to lecture in the university has been changed due to educational new models. Nowadays, we change the chalk by digital whiteboards or smart boards, and this experience means the opening to multimedia activities in the university. New products give the teacher the opportunity to increase students’ attention and encourage interactivity in the classroom. In presented case, the test has been made with a group of Telecommunications students; in the past, teachers developed activities ad-hoc to improve the lectures effectiveness and now the teacher has develops activities ad-hoc using electronic whiteboards. Results show that the participation during the class and specially students’ motivation have increased. The authors of this paper conclude that the application of the interactive boards in university is completely different than in primary school, and available resources on the internet are much more limited in our subjects.

MRI ANALYSIS FOR ARTICULATORY STUDIES IN ENGINEERING AND PHILOLOGY DEGREES USING DICOMPAS TOOL

J. L. García Arroyo, Begoña García Zapirain, Alexander Iribar Ibabe, Amaia Méndez Zorrilla, Ibon Ruiz Oleagordia, Rosa Miren Pagola Petrirena, Itziar Túrrez Aguirrezabal

This work has been developed for engineering studies related with signal processing algorithms and for philology studies about the articulatory model of a language. By this work a study for the modelisation of the correct articulation of phonemes is presented,

made through the treatment of MRI 2D images in the midsagittal plane. A software system was developed; implementing mathematical algorithms that allow the calculation of objective measures of articulatory model parameters obtained through treatment of images, and was used by researchers in linguists, phonetics and engineering. Engineering students can use image processing, statistic and software engineer techniques and even provide to the tool new screening algorithms for calculation of parameters, and the students of linguistics can make the scientific analysis of the characteristics of the language they are studying. The authors (in alphabetical order) are a multidisciplinary team consisting of researchers and professors.

STUDIES OF VOCAL TENSION IN ENGINEERING AND LINGUISTIC DEGREES USING EEG SIGNAL PROCESSING

Begoña García Zapirain, Alexander Iribar Ibabe, Amaia Méndez Zorrilla, Ibon Ruiz Oleagordia, Rosa Miren Pagola Petrirena Petrirena, Alain Sánchez González, Itziar Túrrez Aguirrezabal

This work has been developed for Engineering and Linguistic studies about signal processing algorithms and articulatory tension of speech sounds. A educational unit is presented related to the study of the tension generated around the mouth is presented. To do so, the measures of a portable EEG with 16 channels are used, which captures the muscle signals in 3 points around the mouth. Those signals are analyzed with spectrum-temporary techniques to extract quantifiable parameters like the intensity in the tension, the frequency in the sounds, which appear with each type of sound or the time intervals before and after peak activity times. Engineering students can provide the tool with new algorithms for the calculation of parameters, and the students of linguistics the characteristics of the tension in the sounds. The authors (in alphabetical order) are a multidisciplinary team.

ENGINEERING EDUCATION IN THE DEVELOPMENT OF AN AMMONIA CONTROL FILTER FOR FUEL CELL URINE-BASED

Gabriel Luna-Sandoval, Luis Héctor Hernández-Gómez, Eusebio Jiménez López, Rosa Zepeda-González, Martín Santacruz-Tirado, Marco Antonio Maciel-Monteón, Guillermo Urriolagoitia-Calderón

This paper presents the application of a reverse engineering method to document the design information of an ammonia control filter for urine fuel cell to produce hydrogen used as fuel and green energy. Programs and procedures were applied reverse engineering to characterize relevant and design an ammonia control filter for urine fuel cell, the filter main's goal is the urine to use as a primary source of energy production and renewable green used for internal combustion engines and other important applications. The urine fuel cell is now a practical and economically important to produce a clean energy future: Hydrogen.

SYNTHESIS METHOD NEUROFFORECASTING DIFFICULT TECHNOLOGICAL INSTALLATIONS WITH USE OF INDISTINCT INTELLECTUAL TECHNOLOGIES

Viktor. M. Buyankin, S. K. Kovaleva, Vladimir G. Zakharov

In article the synthesis method neuroforecasting identifications with use of ensemble of hybrid neural networks with indistinct logic is considered at incomplete, inexact static and dynamic characteristics of difficult technological installations. For realisation of this method the block diagramme consisting of ensembles of recurrent neural networks and predicting hybrid neural networks with indistinct logic is offered. The first ensemble of neural networks identifies transitive characteristics of the difficult technological installation, the second ensemble of neural networks spends neuroforecasting transitive characteristics on some steps forward.

Session PM3A

AVALIAÇÃO DO PENSAMENTO CRÍTICO E DA PRESENÇA COGNITIVA EM FÓRUM DE DISCUSSÃO ONLINE UTILIZANDO A ANÁLISE ESTATÍSTICA TEXTUAL

Elenise Maria de Araújo, José Dutra de Oliveira Neto

The process of teaching and learning in distance education requires the use of assessment strategies and efficient and objective discussion forum stands out for promoting the collective construction of knowledge in learning communities. But the evaluation of the forum is restrictive and subjective, disregarding the evidence of cognitive development and critical thinking of the participants. This paper proposes a methodology for assessing critical thinking and cognitive presence in discussion forum. The method recovers the principles of Socratic questioning and presence of cognitive modeled community inquiry. The analysis of the messages used the foundations of information science and lexicometria. The results show that growth of 24.49% vocabulary forum is an indication of students' socio-cognitive development. The student with the best performance forum used $\approx 71\%$ of total keywords with frequency ≥ 20 , and phrases reveal more clues critical stance on the issue.

EXPERIÊNCIAS DE AÇÃO INTERDISCIPLINAR UTILIZANDO AVALIAÇÕES INTEGRADAS EM CURSOS DE ENGENHARIA

Angelo E. B. Marques, Mairlos Navarro, Eduardo A. Botter

In this paper we describe the interdisciplinary experience in Engineering courses at São Judas Tadeu University (USJT, São Paulo, Brazil). Applying Interdisciplinary Evaluations, professors choose a Transversal Theme that will be the motivation to interdisciplinary questions. The content of each discipline will be contextualized and linked to the central theme. In another moment, each discipline are evaluated separately and then students results are compared.

UMA ARQUITETURA MULTIAGENTE DE APOIO AO PROCESSO DE ENSINO E APRENDIZAGEM NO MOODLE BASEADO NA PBL

Laysa Mabel de Oliveira Fontes, Francisco Milton Mendes Neto, Fábio Abrantes Diniz, Danilo Gomes Carlos, Luiz Jácome Júnior, Luiz Cláudio Nogueira da Silva

The Problem-Based Learning (PBL) is a learning theory that emphasizes collaboration and teamwork to solve a problem. However, the implementation of a teaching method based on the PBL is not a trivial task. In virtual learning environments (VLEs), the complexity of implementation of this method is even greater, as the facilitator cannot always detect possible problems in the collaboration, nor have all the information needed to apply the techniques of this learning method. Thus, this paper presents a multiagent architecture to support PBL. This work also shows how the Moodle VLE was adapted to support the teaching and learning according to PBL and how the multiagent system will support students and facilitators during this process.

UM SISTEMA PARA O GERENCIAMENTO E CORREÇÃO DE AVALIAÇÕES OBJETIVAS EM DISPOSITIVOS MÓVEIS

Francisco Eduardo Silva Alencar, Rafael Marrocos Magalhães, Fábio Abrantes Diniz

The elaboration and correction of objective evaluations are generally considered a work tedious and time consuming, may take several minutes or even hours depending on the amount of questions that the evaluation has. Based on this, in this work, we developed an innovative system that uses image processing techniques for correction of proofs with the assistance of mobile devices with the aim of contemplate aspects related to the ease of preparation of proofs and reduction of time to correct them. In addition, the system provides statistical information about the applications of proof as teaching aid element. According to analysis of the results of tests performed in real environments and user of opinions of the system, concludes that this system on mobile devices, in addition to leave the management simpler and faster, reduces the time correction of evaluations significantly compared with some evaluations of existing technologies.

MANIPULAÇÃO ROBÓTICA NA EDUCAÇÃO A DISTÂNCIA

Diogo Gomes de Oliveira, Luiz Carlos Rosa, Galdenoro Botura Jr, Marilza Antunes de Lemos, Márcio Alexandre Marques

This paper presents the proposal, justification, specification and development of software to monitor and control a robot, designated to E-Learning, with an intuitive interface developed from the language of blocks thought the "LabView" platform. The proposed software is able to control the robot's movements and plans its routine. Throughout the alterations performed by the user at a remote terminal, the software sends the data via Internet to a computer connected to the robot, which receives the data and performs the scheduled task.

UTILIZAÇÃO DO VISUAL BASIC - MÓDULO DESENVOLVEDOR DO POWER POINT NO ENSINO DE ENGENHARIA ELÉTRICA

Edson Santos Acco, Jocarly Patrocínio de Souza, Edemilson Jorge Ramos Brandão, Adriano Canabarro Teixeira, Marco Antônio Sandini Trentin

This article results from a study on the implementation of language Microsoft Visual Basic - VB Module Developer from the Microsoft PowerPoint application in teaching Electrical Engineering. Based on literature review and the experience gained with the use of this technology in activities involving didactic and pedagogical content, especially of Analog Electronics, there was a huge potential for simulation of electronic circuits and construction of learning objects for the web using resources programming in VB Developer module present in PowerPoint. In this direction, the article presents an example of creating interactive learning objects as a pedagogical proposal for various applications in the area. Also discusses the possible applications of this model in other fields of teaching electrical engineering, and potential for future teaching of engineering in general, in the virtual learning environments.

CONTROLE DE TRÁFEGO E CONGESTIONAMENTO EM REDES DE COMPUTADORES

Luís Maurício Costa

This paper aims to enlighten one of technology utilized for traffic control and congestion in computer networks. High traffic and congestion, when uncontrolled, are problems of character-decision in the delivery of data and information. Therefore, detailing the Quality of Service (QoS), identifying the worry with the capability of the network, together with the congestion-control algorithms used on routers with Unix-based operating systems. Ideas also addressing how to deal with the user as a possible cause of these contentions. The methodology used was literature review, in order to confirm its effectiveness in certain situations.

Session PM4A

LABORATÓRIO DE CONTROLE BASEADO NA METODOLOGIA “MOTIVAÇÃO PELO DESAFIO”

José Carlos Rodrigues de Oliveira, Liliane Gontijo Assumpção Scott

This work describes the application of methodology “Motivation-by-Challenge” in laboratory, for Electrical and Control & Automation Engineering curricula in Brazil. Students are exposed to a challenge (a problem) to solve, with a set of performance specifications. Small plants are presented or proposed to be constructed. The tools are data acquisition, modeling and parameters identification, validation by simulation, controller design and tuning. The challenge remains, until a reasonable solution is obtained. The students share the learning task with the instructor, being an active part of the process. Differently from the conventional methodology, with repetitive tasks, they have an innovative participation in the learning process, being responsible for the obtained results. One problem of this approach is a bigger amount of work attributed to the instructor, forcing the preparation of new challenges each semester. Otherwise, it results in more effective learning, traduced by the enthusiasm shown by all people involved.

CONTROLE DE VELOCIDADE DE UMA ESTEIRA TRANSPORTADORA

Elias José de Rezende Freitas, Michelle Massessini Faria, Rodrigo Dias, José Carlos Rodrigues de Oliveira

This paper describes one application of the learning methodology “Motivation-by-Challenge” in a laboratory course for the Electrical and the Control & Automation Engineering curricula at UFMG, Brazil. Students are exposed to a challenge, having to solve a problem at some performance specifications. Small scale plants are presented or proposed to be constructed. This work deals with speed control of a “conveyor”, with the DC motor and sensor taken as scrap pieces of equipment. It was applied a chopper PWM control, and the hardware was completed by a microcontroller. The software was written in C++ for Windows, with a graphical interface with the plant. The static characteristic of the sensor was determined, showing good linearity, and the process was modeled using a black-box method. Some types of controllers were designed, implemented and tested. After some difficulties, the challenge arrived to a good result, proving to be very motivating.

CONTROLE DE TEMPERATURA DE UM FORNO

Égonn Hendrigo Carvalho Silva, Rodrigo Magalhães Alves, José Carlos Rodrigues de Oliveira

This paper describes one application of the learning methodology “Motivation-by-Challenge” in a laboratory course for the Electrical and the Control & Automation Engineering curricula at UFMG, Brazil. The students are exposed to a challenge, having to solve a problem for a set of performance specifications. Small scale plants are presented or proposed to be constructed. This work deals with temperature control of an electric oven, with all the hardware implementation done in analog mode. The static characteristic of the sensor is determined, showing good linearity. The process is constructed and modeled, using a black-box method, through the observation of its step response. A Proportional plus Integral controller is designed for closed-loop operation, implemented and tested, showing good dynamic response to set-point changes. Perturbations are introduced, and the controller recuperates the desired temperature. The challenge arrives to a good result, proving to be very motivating for the students.

PROTOTIPAÇÃO RÁPIDA DE APLICAÇÃO INTERATIVA: UMA EXPERIÊNCIA NO DOMÍNIO EDUCACIONAL

Rozelma Soares de França, Haroldo José Costa do Amaral

Normally, software engineers find several difficulties during the requirements elicitation. In the educational field, this problem is not different. In this article, we report an experience with quick prototyping used as the basis of requirements validation and elicitation of an application to support the teaching of Logic Programming. The results indicate that the technique anticipated problems that would only be perceived at later stages, when it would be much more costly to make a change. Still, it generated a high sense of ownership and commitment to the solution that was being planned and increased user satisfaction.

ESTUDO COMPARATIVO DO MOTOR DE INDUÇÃO TRIFÁSICO E MOTOR SÍNCRONO DE IMÃ PERMANENTE NO ACIONAMENTO DE VEÍCULOS ELÉTRICOS

Geraldo Leão Lana, André Augusto Ferreira, Fernando Lessa Tofoli

The main contribution of this work concentrates on the comparison of two different types of electric motors fed by a dc/ac converter for use in the drive system of an electric vehicle: the induction motor with cage rotor and permanent magnet synchronous motor. For each electric motor are presented dynamic models, the proper configuration of dc/ac converter and control system. The performance is analyzed using computer simulation in Matlab/Simulink® considering the characteristics of the load. Therefore is possible define the maximum percentage yield produced by the system without compromising dynamic performance.

ESTRATÉGIAS PARA FORMAÇÃO DE EQUIPES HOMOGÊNEAS E HETEROGÊNEAS A PARTIR DE ALGORITMOS DE ANÁLISE DE AGRUPAMENTOS

Huliane M. Silva, Ana Paula D. Romero, Flavius da Luz e Gorgônio

In academia, teachers often adopt different approaches to promote learning beyond simple content oral exposure in the classroom. A very common approach in all levels of education is to conduct academic activities in teams, where students are divided into groups according to some criteria pre-established by the teacher and each team is responsible for performing its respective task. However, the process of forming teams randomly or from affinities between students does not always favors learning process. In this context, this work presents some strategies based on the use of cluster analysis algorithms, which allow the teacher to guide the process of team building. Results demonstrate the effectiveness of the proposed strategies in both the formation of homogeneous teams as heterogeneous ones allowing the exchange of knowledge and encouraging mutual learning among team members.

APRENDIZAGEM SIGNIFICATIVA E ENSINO DA ENGENHARIA: O SOFTWARE DIMVISUAL COMO MATERIAL POTENCIALMENTE SIGNIFICATIVO PARA O ESTUDO DE PEÇAS SUBMETIDAS A ESFORÇOS AXIAIS DE COMPRESSÃO

Aline Silva de Oliveira, Carlos Vitor de Alencar Carvalho

This article aims to provide an educational software for teaching discipline strength of materials specifically on axial stress. This work comes to the need to develop and generate tools to improve the teaching-learning process in engineering. The software DIMVISUAL has the basic problem of determination of the total area of steel and that each bar comprises a concrete column being requested by an external axial compressive loading. The system also presents a visual interface where you can see the three-dimensional structure with their respective dimensions. The structure can be freely manipulated by the user and facilitates the interpretation and analysis of results.

Session SM4A

IMPLEMENTACIÓN DE FILTROS EN LOS GRADOS DE INGENIERÍA USANDO EL PROCESADOR NIOS II

J. Vicente Sáez, Begoña García Zapirain

For engineering studies related with signal processing algorithms, filters are probably the resource more used, so a lot of the time used in processing the whole algorithm is wasted in filters execution. Reducing the processing time of the filters the processing time of the whole algorithms can be significantly reduced. The DSPs are more easy to use than the FPGAs, because write a program is easier than describe hardware. On the other hand the FPGAs have more capability of parallel processing than the DSPs. It will be great to own a system that have the better of these two technologies, very easy to develop algorithms and a high performance due of a high parallel processing possibility. This is what is presented in this work, a reconfigurable unit in witch can be implemented large filter structures controlled by a Nios II processor.

EXPERIENCIAS DE LA APLICACIÓN DEL ABP EN UNA MATERIA DE MECANISMOS EN LA UNIVERSIDAD LA SALLE NOROESTE

Eusebio Jiménez López, Gloria Isabel Bojórquez Morales, Luis Andrés García Velásquez, Laura Olivia Amavizca Valdez, Víctor Manuel Martínez Molina, Lina López Aranda, Gabriel Luna-Sandoval, María Enedina Hernández Flores

The engineering education requires the competency model implementation to achieve robust and meaningful knowledge in students. The PBL (Problem-Based Learning) is a didactic technique commonly used to motivate students, to develop and implement knowledge, skills and abilities in different thematic subjects. This article presents the PBL application experiences in mechanisms field related to the Industrial Design Engineering career at Northwest La Salle University. The problem or project was required by a company, it consisted in a design, a model and a parallel robot structure control, which was necessary to apply robotics knowledge, vectorial calculus, numerical methods, kinematic, design, manufacture and symbolic calculus software application. The PBL allowed to develop research skills in students and to encourage collaborative work.

EL APRENDIZAJE BASADO EN PROBLEMAS COMO TÉCNICA DE ENSEÑANZA Y APRENDIZAJE EN LA MATERIA DE SISTEMAS OPERATIVOS EN UNA INSTITUCIÓN DE NIVEL SUPERIOR

Laura Olivia Amavizca Valdez, Luis Tadeo Portela Penúnuri, María Enedina Hernández Flores, Eusebio Jiménez López

To achieve meaningful learning and acquire solid professional skills in the by competencies model is necessary to implement the teaching and learning techniques that allow students to gain knowledge, skills and abilities in the various themes that are developed in the subjects, especially in the teaching of use and management of various instructions or orders that users provide to Operating Systems, under which they operate computer equipment in different institutions at both, educational and business. The purpose of this paper is to share the experience of students in Information Technology and Communication Systems area at the Technological University of Southern Sonora, in the implementation of Problem-Based Learning (PBL) as a learning technique in the field Operating Systems, focused on solving problems by applying basic commands in technology platforms as Windows 7 and Ubuntu 12.4.

LA IMPORTANCIA DE LA MINERÍA DE DATOS COMO ALTERNATIVA DE LAS TECNOLOGÍAS DE LA INFORMACIÓN PARA EL SECTOR PRODUCTIVO

Juan Carlos Vázquez Brindis, Laura Olivia Amavizca Valdez, María Enedina Hernández Flores, Eusebio Jiménez López, Dolores Guadalupe Juárez Moreno

Since various companies and corporations began to use database systems, has been accumulated a lot of information in history records and "data warehouses", this situation start the search for new competitive advantages problem based on the amount of information stored, and that's why became necessary to develop techniques for obtaining knowledge, one of this techniques it's "Data mining". This article aims to show success stories of the benefits of implementing to the productive sector various data mining techniques from the information stored in their respective database systems, this is intended to give engineering students a new perspective when it comes the time of decide IT solutions on the business environment.

USO DEL CARTEL, ELABORACIÓN DE MATERIAL AUDIOVISUAL, Y GUÍAS DIDÁCTICAS, COMO RECUPERACIÓN DE LAS COMPETENCIAS NO ACREDITADAS, EN UTS

José Antonio Bojórquez Molina, Lina López Aranda, Eusebio Jiménez López, María Enedina Hernández Flores

In January 2010 came into force on competency assessment system in the Technological Universities in Mexico. At the University of Southern Sonora Technology (UTS) was implemented in September 2010, which gives effect to the Rules of Assessment of Learning. The results obtained by students on a scale set out alphanumeric with a minimum satisfactory (HS) eight. In case of breach, the youngest of eight numerical score is identified as non-accredited (NA). If this happens you will have opportunity to prove, when the teacher apply recovery actions from the competition. This paper presents viable alternatives for use in other assessment tools addressing different learning styles, so it is proposed to reassess the domain of each jurisdiction through the use and presentation of posters, audiovisual materials development and tutorials to help this those students assessed (NA).

LA VALIDACIÓN DE UN INSTRUMENTO DE EVALUACIÓN DE SATISFACCIÓN DE LOS ESTUDIANTES, UTILIZANDO ESTRATEGIAS DIDÁCTICAS

Lina López Aranda, José Antonio Bojórquez Molina, David Lorenzo Ochoa Escarrega, María Enedina Hernández Flores, Laura Olivia Amavizca Valdez, Eusebio Jiménez López, Alberto Luna Bracamontes

This article presents the proposed format to document the experiences of students in the career of industrial processes during the period from May to August 2011 at the Technical University in Southern Sonora. The instrument was applied to two groups who used Problem based Learning (PBL) strategy in the field of linear programming in college higher technical level and the case method in the field of applied statistics at the engineering level. The instrument explores the student's perception about the performance of the teacher, the process of planned learning activities and their own performance and learning. The instrument has been validated in this first experience as it provides the information needed to document the experience of teaching and learning that refers, in addition to the statistical test of Cronbach's alpha coefficient for the reliability of the instrument.

Fernando Bertolotti, Alberto Amador Arriaga, Fabiana Ferreira

This paper describes a test bench of electric machines to be used in educational applications and it is designed to teach in the area of industrial automation for graduate school of Electronic Engineering, Faculty of Engineering, University of Buenos Aires. The test was conducted as part of an exchange program with a graduation student's in Mechatronics Toluca Institute of Technology. This bank consists of two three-phase asynchronous machines mechanically linked by a shaft coupling that can be operated in all possible ways: as a motor and generator as a brake. Drive Motor and brake can be achieved with a variable speed maneuvering engines or directly on the grid. The command is automated machine with programmable logic controllers (PLC's). It is reported how it has been developed the sequence of tasks for the construction of electrical machines bank as well as instructional practices are described that can grow with it.

Session PT1A

EDUCAÇÃO NA INFORMÁTICA E ENGENHARIA – TÉCNICAS DE MELHORIA DA APRENDIZAGEM DOS CONCEITOS TÉORICOS

Clara Amelia de Oliveira

Nowadays it is necessary to deal with globalization broad view in Education. Integration is a core principle in new approaches of Informatics and Engineering courses. This paper presents a pedagogic practice considering Thematic view for beginners. On this direction, this paper presents several pedagogic practices enhancing memorization and theoretical concepts learning process. In addition, concrete examples from broad view in education in Brazil (UFSC) and South Africa (CPUT Belle Ville Campus) are presented to show how a new trend in Informatics and Engineering Education can be immediately implemented without expensive monetary resources. Conclusion points out efforts are necessary to reach new vision in Technological Education, not only under technological tools reference but also under new principles like integrative one, supported by the described pedagogic practices.

MULHER E TECNOLOGIA: UM ESTUDO SOBRE A PARTICIPAÇÃO FEMININA BRASILEIRA NA CRIAÇÃO DE PRODUTOS E PROCESSOS INDUSTRIAIS

Maria Helena Teixeira da Silva, Barbara Ferreira Bezerra

The role of women in the development of mankind has always been important, and this statement seems unquestionable. However, many times the development of mankind is told by the history of the technique and the technology and, in this history, the number of women inventors is very small if compared to the number of men inventors. There are many reasons to this. One of them is the restricted access to education and socialization over the centuries, in almost all the world. This situation has changed very much in the last decades. One indicator is the number of women in technical professions like engineering and science computer. The aim of this paper is to present the project: Women and Technology in Brazil which will research the Brazilian female participation in the creation of products and processes that solve technical problems and had scientific research in its creations.

UM META-ALGORITMO PARA OTIMIZAÇÃO DE PLANEJAMENTO EM LINHA DE PRODUÇÃO DE SOFTWARE

Denis Ávila Montini, Paulo Marcelo Tasinaffo, Alessandra Ávila Montini, Luiz Alberto Vieira Dias, Adilson Marques da Cunha

Nowadays, there are many ways to perform project planning software and manufacturing in each of these ways of planning requires a proper definition of a process to achieve your goal metrological forecasting. In this investigation, the research area is Artificial Intelligence algorithms applied to the design of projects for production lines characterized as manufacturing cells. This type of approach for the design project aimed to improve the understanding and assertiveness in the planning of the operation, through the use of an Intelligent Agent. The Intelligent Agent was proposed model-driven and aimed to identify the installed capacity of code in a specific programming language.

DESENVOLVIMENTO E UTILIZAÇÃO EM SALA DE AULA DE UM SOFTWARE DIDÁTICO PARA ENSINO DE AEROGERADORES

Edisio Alves de Aguiar Junior, Carlos Vitor de Alencar Carvalho, Júlio César da Silva, Vinicius Maciel Pinto

The use of computer-assisted technology in education has been utilized increasingly in the last years, and several studies have been conducted, focusing on development and applications of teaching tools. Along this path, this study aims to provide a tool for

teaching the fundamentals of wind energy and its use through Wind Power Generators. The computational tool predeveloped has, through demonstrations on virtual reality, the behavior of a horizontal axis wind power generators, and according to the Meaningful Learning Theory, it's classified as potentially meaningful. The impacts of the use of the tool together with the students are assessed by means of questionnaires and software development is based on the use of development tools for free use.

INDICADORES DE PERFORMANCE PARA PROJETOS DE TREINAMENTO EM SEGURANÇA CIBERNÉTICA

Joni de Almeida Amorim, Per M. Gustavsson, Oswaldo Luiz Agostinho

The models related to security systems suggest solutions based on multidisciplinary teams with people from different areas working with the same goal. The preparation of such teams involves performing different types of training, including the use of simulations. In this perspective, this paper presents a proposal for continued research through international cooperation with a company in Sweden. In this case, the main objectives include creating Key Performance Indicators (KPIs) for training projects in cyber security. This paper aims to contribute to the development of theory and practice in project management, in particular by highlighting the potential use of international standards in training projects.

DIMENSÕES DA QUALIDADE DA INFORMAÇÃO: UMA CLASSIFICAÇÃO BASEADA NO CONTEXTO

Osmar Aparecido Machado, Jorge Rady de Almeida Junior

Like other assets, information came to be seen by a significant portion of the scientific community as a possible element to be measured and consequently rated in terms of aspects such as quality, cost and value, among others. So, this study is about issues related to the use, quality and organizational impacts that may be caused by use of information. The proposal is theoretically structured in two directions: the dimensions of contextual category of information quality and the user-based approach. Therefore, it was done a survey with specialists users in the production and use of information on the perception about the aspects of information and the quality that most affect the performance of their daily activities and also in decision-making. It proposes finally, a classification of dimensions based on the perception by users, which can be understood as an alternative category about the dimensions of quality information.

ESTUDO DE UMA APLICAÇÃO OPEN ARCHIVES INITIATIVE E ACESSIBILIDADE WEB PARA IMPLEMENTAÇÃO DE REPOSITÓRIOS DIGITAIS

Igo Paixão de Medeiros, Marcos Paulo Alves de Sousa

A digital repository has the purpose to assimilate, preserve and disseminate scientific production of institutions. The Museu Paraense Emílio Goeldi (MPEG) uses this technology to share their publications, separated into different research in the areas of Botany, Zoology, Environment Sciences and Social. Majority of the scientific publications occurs in electronic journals paid, which is a means in limited aspects of accessibility and dissemination of science. A modern solution to this problem is the implementation of repositories of accessible publication using the technology Open Archives Initiative, to provide free access to scientific productions between teaching and research institutions. The repository of MPEG offers secure storage of information and meets the specifications and guidelines of the standard of accessibility e-MAG of the federal government and the Guide to Accessibility of Web Content proposal by the World Wide Web Consortium (W3C). The repository is in address <http://repositorio.museugoeldi.br/jspui> and contains 600 scientific publications.

Session ST1A

EL APRENDIZAJE POR PROYECTOS: PARTICIPACIÓN DEL ALUMNO DE INGENIERÍA EN DISEÑO INDUSTRIAL EN EL DESARROLLO DE SOLUCIONES PARA REALOJOS TEMPORALES: LA VIVIENDA DE EMERGENCIA

Silvia Nuere, Pablo Bris, Félix Bendito, Manuel Islán

The European Space for Higher Education (ESHE) has defined common guidelines for the European universities to increase concepts related to the student learning process and with a bigger interest focus on investigation. All in all, we look forward to a learning connection between the professional world and lifelong learning. We consider that learning based on projects is an adequate proposal in this educational frame, not only because it can be well adapted into it achieving their requirements, but also because the transversal competences as collaborative work or interdisciplinary coordination can be developed. We propose a problem to be solved by students focus on the research of solutions for a temporary human settlement planning for displaced populations in emergencies, based on modular housing with minimum comfort conditions, and easy to assemble.

ASIGNATURAS PENDIENTES EN LA ENSEÑANZA SUPERIOR: DIDÁCTICAS ESPECÍFICAS Y SISTEMAS DE EVALUACIÓN

Claudio Dominighini, Zulma Cataldi

In this report we would like to point out the different learning styles and their relation with engineering teaching methodologies and didactic systems, as motivating instances which also help the students permanence in the university system. Under these circumstances, the specific didactic methods get a transcendental value and deserve some reflection upon the evaluation systems with respect to different teaching strategies. Regarding the specific didactic methods, it is necessary to make the "hidden curriculum" visible, that is, analyze why a certain way of teaching is used in a "traditional" institution and the professional ethics behind each course of studies. Isolated efforts are not enough. Specific didactic methods should be a current subject in educational agendas, today as well as in the future.

MODELOS Y SIMULADORES EN LA ENSEÑANZA DE INGENIERÍA: LAS ESTRATEGIAS DE POR DESCUBRIMIENTO

Zulma Cataldi, Alejandro Izaguirre, Oscar Bruno, Claudio Dominighini, Viviana Sánchez, Fernando Javier Lage

Society at present, subject to multiple changes, requires that teachers as well as learners develop together competences comprising all areas of training. It is necessary to value and incorporate the skills of all the participants. It is possible to enhance intelligence with the development of a creative thought. Models and simulators are presented as a possibility. They permit different options for the progress of technology, they motivate the creation of hypotheses and that way they generate scientific development, which is different from traditional education. According to the dynamics of modern times, a motivating education is necessary which may interest the student, particularly the student of engineering for whom the words creativity and inventiveness are permanent features in his formation.

AVANCES DE LA INVESTIGACIÓN TIC Y TURISMO RURAL

Sandra Fernández, Valeria Di Pierro, Enrique Bombelli, Rodolfo Bertoncello, Zulma Cataldi

Linking Rural Tourism (RT) and the Information and Communication Technologies (ICT), highlights the need for new tools to accompany the social and territorial transformations, which in recent years have been occurring in rural areas. The incorporation of ICT as a tool for cross-linkage between the professionalization of human resources, supply and demand for RT, business strengthens the potential to extend into new projects in the near future. This paper summarizes some of the findings to investigate each of the three lines of analysis individually, but allow conclusions to be derived from joint consideration, the latter work currently under development for closure and final report, for the project UBACyT (20020090200485) ICT and Rural Tourism:(2010-2011) Scientific Program of the University of Buenos Aires, which in turn is followed by another of the same tenor (20020110100223) entitled The use of ICT as competitive and technological resources applied to rural tourism (2012-2015).

LIMITACIONES DE LOS MÉTODOS OBJETIVOS DE LA MEDICIÓN DE LA CALIDAD DE VIDEO DE ACUERDO A LA NORMA H.264

Fernando Javier Lage, Zulma Cataldi, Jorge R López, Matías Pérez Rebas, Daniela Martínez Garro

This article discusses the limitations of objective methods for measuring the video quality by reference to the H264 standard. The analysis looks at the relationship between subjective and objective methods as well as the syntax, semantics, the processes and the recommendations contained in the H264 standard. The inter prediction process associated with the derivation process for neighbouring macroblocks, blocks and partition regarding the adjectives of the macroblocks in decoding is one of the areas of analysis of this study, also considering the limitations of this process to define, measure and improve the quality of output parameters as of the standard. Likewise the decoding process is particularly studied considering input elements (NAL units) and decoded samples of the processed image as the output product. In the end briefly discusses factors related to luminance and chrominance.

DETECCIÓN DE ANOMALÍAS CARDÍACAS MEDIANTE LOS ATRIBUTOS DE LA TRAZA COMPLEJA

Fernando Javier Lage, Nahir Murana, Olaf Grawon, Zulma Cataldi

This paper describes the concept of a complex trace get different attributes from it. Although the method already been widely applied to the Earth Sciences, the present communication seeks show some possible applications in the field of human medicine and veterinary medicine. The focus of this work is the process of obtaining the complex trace and their attributes from the signals (or scanned) digital electrocardiograms ECG, their representation and their results. Details each of the steps taken and the findings obtained.

UNA MEJORA EN EL MÉTODO PINCH

Omar A. Iglesias, Carmen N. Paniagua

Structuring heat exchangers networks (HEN) is one of the most important topics in the academic curricula and practical working of Chemical Engineering. Although the structuring strategy proposed by the Pinch method constitutes an effective tool in this field, in some cases, the method fails obtaining designs with minimum consumption of utilities. This work proposes a condition that allows to guarantee that minimum. One of the classic rules of the Pinch method turns out to be, in fact, a particular case of the condition proposed here. Demonstrative examples of the proposed methodology are included.

Session PT2A

AVALIANDO OS RESULTADOS DAS OFICINAS DE INFORMÁTICA E CIDADANIA DO PROJETO MUTIRÃO PELA INCLUSÃO DIGITAL

Adriano Canabarro Teixeira, Magali Ziger, Marco Antônio Sandini Trentin, Evandro Luís Viapiana, Edemilson Jorge Ramos Brandão, Edson Santos Acco

This article presents the results from 08 years of project activities carried out by Collective Effort for Digital Inclusion, from University of Passo Fundo. The project was created in 2004 and intends to implement Digital Inclusion actions aiming at appropriation of network technologies by the people involved, in a perspective of communicational environment and citizenship. It offers computer and citizenship workshops, focused to develop activities contextualized to the subject's reality, in order to awake the creative potential of individuals in a dynamic of recognition of digital technologies as collaborative and communicative elements.

ESPAÇO KELIX DE INCLUSÃO DIGITAL: RELATO DE UMA EXPERIÊNCIA DE INCLUSÃO DIGITAL EM ESPAÇO PÚBLICO DA CIDADE DE PASSO FUNDO/RS

Adriano Canabarro Teixeira, Magali Ziger, Marco Antônio Sandini Trentin, Evandro Luís Viapiana, Edemilson Jorge Ramos Brandão

This article presents the development and results obtained from a research conducted under Call 49/2010 - IncDigSo - Call MCT/CNPq nº 49/2010 - Digital and Social Inclusion. Its goal was to propose a specific methodological strategy for public spaces of Digital Inclusion, with great heterogeneity of frequency and from different segments of society, in order to experience citizenship, cultural strengthening and use of free software. The project was developed along the Largo da Literatura at Armando Sbeghen Square, an area of great movement of people, in the city of Passo Fundo, during the period from December 2010 to December 2011.

UMA EXPERIÊNCIA BRASILEIRA NO ÂMBITO DO PROJETO UM COMPUTADOR POR ALUNO

Adriano Canabarro Teixeira, Marco Antônio Sandini Trentin, Betine Dihel Setti

This article presents the process of data gathering and analysis regarding the consequences of educational laptop in the daily life at State School of Elementary Education Manuel Arruda Câmara, in Carazinho city, Rio Grande do Sul, Brazil. The project, supported by grants from federal government, aims to propose, implement and evaluate an alternative pedagogical methodology for appropriating educational laptop in a school context that considers the technology's potential and the dynamic established by Brazilian Government's program A Computer per Student (PROUCA).

DA ELABORAÇÃO DO TERMO DE ABERTURA DE PROJETO DE PESQUISA À GESTÃO DE RISCOS: SUBSÍDIOS PARA A GESTÃO ACADÊMICA DE INVESTIGAÇÕES CIENTÍFICAS

Pollyana Notargiacomo Mustaro, Rogério Rossi

The development of academic research is a challenge for students seeking different grades. Thus, the process of planning and research management becomes a crucial element for the project success. This requires the creation of Research Project Plan (RPP). This plan, inspired by practices of project management must consider mapping of functions and features of the research project, expected results, quality level required, communication format with the advisor and risk management. In the academic context the risk management approach has to consider the risk identification and analysis and the factors that can prevent it, the planning and monitoring process complements the risk management activities. The Academic Project Risk Management Plan (APRMP) contributes with the researchers in the planning, development and conclusion of scientific research.

SCRATCH COMO ESTRATÉGIA DE ENSINO DE ALGORITMOS

Marco Antônio Sandini Trentin, Adriano Canabarro Teixeira, Neuza Terezinha Oro, Betine Dihel Setti

This article presents methodological assumptions and strategies of using Scratch software in learning a first programming language for students of different educational levels. Scratch is a programming language created by MIT where all the commands are in the form of graphical components, through an intuitive visual interface, consolidating itself as a powerful resource for learning logical, mathematical and computational concepts whether for students from Elementary School, High School and / or Higher Education.

ROBÓTICA COMO RECURSO NO ENSINO DE CIÊNCIAS

Marco Antônio Sandini Trentin, Adriano Canabarro Teixeira, Cleci Teresinha Werner da Rosa, Álvaro Becker da Rosa

This article presents a methodological approach of using robotic artifacts as a pedagogical resource in teaching concepts that are abstract and difficult to understand by students of primary and secondary school, in particular those related to mathematics and physics. These features are built with Arduino, which is an open hardware platform, with a low cost and easy to program. It currently presents a series of components (shields), also low cost, which can act in conjunction with Arduino, such as output devices (audio and video devices), input devices (color sensors, image, temperature, brightness, GPS, buttons, encoders), communication devices (wireless, wi-fi, ethernet, GSM), among others.

CRIAÇÃO DA ÁREA DE URBANIZAÇÃO NOS CURSOS DE ENGENHARIA CIVIL NO BRASIL

Antonio Carlos M. Chemin, Eleudo Esteves de A. Silva Junior, Fernando E. C. Vidal

Accelerated social transformations and significant that is happening around the world involved in the emergence of complex problems of difficult solutions in many ways stem the spread of new and innovative technological systems such as energy, transport, telecommunications, among others. Have traditionally fallen to the professional civil engineering assignments to plan implement and operate several of these technological systems. Thus it is proposed that the courses of Civil Engineering and to have a new way of structuring more adapted to the demands of society with numerous critical and complex problems, such as the broad issue of territorial settlement of human populations and their resulting crisis of sanitation, transport housing, energy and supply among others.

O LABORATÓRIO DE INFORMÁTICA COMO COMPLEMENTAÇÃO DA PRÁTICA DA SALA DE AULA: ESCOLA PÚBLICA X ESCOLA PRIVADA

Marinês Vornath, Vera Beatriz P. Z. Weber, Maria Cristina Rakoski, Gustavo Griebler

This work constitutes since the premise that ITCs in education are increasingly present in schools in order to qualify the pedagogical actions. This research is characterized as a comparative analysis of computing lessons developed in municipal and private schools. This is a study qualitative and quantitative, conducted with students in the 4th year of Elementary School, professionals of Informatics and Regents Professor of the class, of a city in the state of Rio Grande do Sul, Brazil, with the objective of analyzing the computer use by local schools researched and its respective effectiveness in the process of teaching and learning. Through the data obtained, the research has to seek clarification and understanding of the relationship between school activities developed in the classroom and in the laboratory of computing, analyzing its contribution in teaching and learning.

Session PT2B

DESENVOLVIMENTO DE SISTEMA CAVE DE BAIXO CUSTO PARA O AUXÍLIO AO ENSINO DA ENGENHARIA

Carlos Magno de Lima, Rosangela de Araújo Santos

Knowledge diffusion has been applied through several media devices in order achieve its goals. It is notorious the increasing use of tools and techniques which assist and accelerate knowledge acquisition through multisensory channels. However, Virtual Reality has been highlighted recently as a helpful way to deal with this challenge. Virtual Reality is based on a man-computer interaction in order to allow the user the feeling of being in a real environment. In this paper, it will be presented the entire methodology for the construction of a low-cost CAVE system, as well as, implementing APIs of free software to support the construction and manipulation of virtual worlds aimed to the teaching of engineering and other sciences. All this effort has contributed to the development of new forms of knowledge acquisition by changing the previous paradigms and new challenges in providing quality education.

UMA FERRAMENTA PARA ELABORAÇÃO E DISTRIBUIÇÃO COLABORATIVA DE NOTAS E RECURSOS DIDÁTICOS PARA O ENSINO DE PROGRAMAÇÃO

Lucas de Almeida Marciano, Fabrício de Azevedo Vale Guerra, Flavius da Luz e Gorgônio, João Paulo de Medeiros Santos

Currently, it is increasingly common the production of teaching materials in a collaborative way, given the expansion of social networking and ease of interaction among several research groups. Although this interaction is possible, there are still difficulties in the way it is organized, such as the lack of criteria in conflict resolution and the overlap of produced content. Therefore, this paper proposes a methodology to rule the production of teaching material collaboratively, through the use of educational standards and rules of interaction. The proposition includes the creation of a portal which incorporates this methodology, enabling the interaction of several agents, geographically distributed.

SISTEMAS TUTORIAIS INTELIGENTES EM ÁLGEBRA RELACIONAL E BANCO DE DADOS NOS CURSOS DE TECNOLOGIA DA INFORMAÇÃO

Ademir Avila, Marlene Alves Dias

In this paper we succinctly approach the theoretical basis of the presented research on mediation and exchange of experiences between professors and students and students among themselves considering Vygotsky's social historical view. Next we present the research methodology, as well as the Smart Tutorial System built to evaluate the way possible levels of assistance between the different actors are dealt with, in the case of study of relational algebra, database and Structured Query Language-SQL in higher courses in Information Technology – IT. Subsequently, we have put this system in operation and, finally, we have considered the appropriate solutions proposed by students to the queries defined as parameters in the teaching of relational algebra, database and SQL, and some results and conclusions obtainable by means of such analysis.

MAPEAMENTO E CARACTERIZAÇÃO DOS NÍVEIS DE CAMPOS MAGNÉTICOS EM AMBIENTES RESIDENCIAIS E APRESENTAÇÃO DO MAPA DE RISCO

Jéssica Vieira Hartmann, Rogério Marcos da Silva, Carlos Alberto Tenório de Carvalho Júnior, Ciro José Egoavil Montero, Fábio Hugo Souza Matos

This article aims to characterize levels of magnetic fields in the frequency of 60Hz in a residential environment, presenting a methodology for the preparation of the risk map these levels. The human being is exposed to many levels of magnetic fields, because the environment in which we live have multiple sources of electric and magnetic fields of low frequency associated with the use of electrical power, including many appliances. A human exposure to levels higher than those recommended by national and international standards, such as NBR 15415 and RN n° 398 of ANEEL, can cause biological effects such as stimulation of nerve cells in the brain, peripheral nerves and muscles. So this article tends alert through a mapping of existing equipment in a residence levels of magnetic fields that the general public is exposed by obtaining a risk map with the field values.

LABORATÓRIO REMOTO COMO SUPORTE AO ENSINO E PESQUISA NA ÁREA DE QUALIDADE DA ENERGIA ELÉTRICA

Érica Vasconcelos de Moraes, Luis Carlos O. de Oliveira, Rodrigo A. Nunes de Oliveira, Luiz Fernando Bovolato, Márcio A. Origa

Internet associated with the new Information and Communication Technologies (TIC's) has opened new horizons for engineering education and made possible the development of valuable resources for support in Distance Education (EaD). Among them, are the Remote Laboratories and Virtual Learning Environments (AVA), which are mainly targeting the solidification of theoretical concepts through practical applications in distance education systems. This paper presents the partial results obtained related to the proposed use of a AVA with sharing a Remote Laboratory. In this context, we highlight the basic procedures adopted in the preparation of learning objects, as well as the evaluation of preliminary results from the point of view of settling the knowledge, capability and flexibility in the use of the proposed experimental tool.

KIT EXPERIMENTAL DE CONVERSORES CC-CC CONTROLADOS ATRAVÉS DE INTERFACE USB UTILIZANDO SOFTWARE LIVRE SOB GPLV3

Cleiton Gili, Laio Oriel Seman, Luiz Carlos Gili, Romeu Hausmann

Lessons in the classroom can often not given sufficient time to teach students the necessary practice for learning. Toward that lack of time, a kit that can generate pulses for different dc-dc converter is made in order to facilitate learning and to assist the teacher. And how it will be better if this kit is controlled by a computer, catching the student's attention by the use of modern tools that are

used in their day-to-day, all through USB (Universal Serial Bus) communication, present on most computers produced since ten years ago. The project also encompasses the whole concept of free software, bringing an open tool, written in a high level language called Python, with source code available so that anyone can contribute to the work. In the study all the required steps to build the kit are shown, divided into three stages, hardware, firmware and software

CURSOS DE COMPUTAÇÃO NO BRASIL E A FORMAÇÃO DO EDUCADOR

Carlos Acácio de Lima

Aiming to teach education courses of Computer Science, the research sought to answer what are the challenges for teacher training in this area, from the analysis of some of the pedagogical education institutions in Brazil. The method consisted of a literature review of official documents considered by the higher education institutions, especially political projects and analyze educational institutions of the weight given to the basic disciplines, disciplines and specific pedagogical disciplines. What had the background of teacher education for this area of expertise was the need to overcome the dichotomy technical / didactic, leading achieved as a result of the need to promote the most qualified and committed training with courses in computing, allowing fitness training needs of the student front curricular guidelines. This part of training more qualified seeking freedom and autonomy by educators.

DIMENSÕES DOS JOGOS E ENSINO

Marsal Alves Branco, Marta Rosecler Bez, João Batista Mossmann, Thiago Godolphim Mendes

The aim of this article is to rescue important concepts for creating Constructs Digital Learning from a multidisciplinary perspective. Pursuit of education, computer science and game studies tools that tenses the production of learning objects considering the respect and balance between these areas. Digital Learning Constructs are learning objects that work procedurally the contribution of each area without one is subordinated to another. In this logic, each area has the ability to impact the guidelines of the Construct from the tension and dialogue between the parties.

Session PT3A

DESPERTANDO O INTERESSE PELA CIÊNCIA DA COMPUTAÇÃO: PRÁTICAS NA EDUCAÇÃO BÁSICA

Rozelma Soares de França, Waldir Cosmo da Silva, Haroldo José Costa do Amaral

Nowadays, society has increasingly required many knowledge and skills. The Computational Thinking is one of them. It is the foundation of Computer Science, and may also be applied to other sciences, in order to systematize or organize the solutions to many problems. Thus, becomes necessary, so that future sociologists, economists, musicians, among others, to interact with computer professionals in an interdisciplinary way. So, this article reports the experience lived by students Degree in Computer Science from the University of Pernambuco, in their supervised internships with students of Basic Education in Brazil. The practice adopted made use of visual programming environment Scratch, developed by MIT, stimulating creativity and arousing interest of students for the area of Computing as a way of spread of algorithmic thinking.

APLICAÇÕES DIDÁTICAS DO ROBÔ MÓVEL MICHELANGELO

Renê Pegoraro, Marco Antônio Rahal Sacoman, Humberto Ferasoli Filho, Silas Franco dos Reis Alves

This work presents the use of the robot Michelangelo as a teaching tool in various classes of Computer Science Course from São Paulo State University, at Bauru-SP, Brazil. The robot Michelangelo is a low cost mobile robot that was developed in the Laboratory of Autonomous Mobile Robots - LARMA (Portuguese language acronym). The purpose of this robot is to offer an attractive and challenging environment for students where they can develop a practical and playful various concepts presented in the basic disciplines of the course. Due to the multidisciplinary nature of robotics, several related areas could benefit from its use in graduation. In Computer Science Course in Bauru, robotics is used as a support for various experiments in order to stimulate learning electronics, digital logic, and programming in the disciplines of Digital Circuits Laboratory, Algorithms and Assembly Language.

UTILIZAÇÃO DE BANCOS DE DADOS ONTOLÓGICOS EM INTEGRAÇÃO DE BASES DE DADOS HETEROGÊNEAS

Leandro Pupo Natale, Nizam Omar

The increasing demand for new technologies allow greater user's interactivity and participation, promoted the emergence of collaborative virtual environments. Users share heterogeneous resources in these environments, and stored in databases structurally different. For these data can be found, used efficiently and safely, must be integrated into a single and uniform format automatically, and shared with a negotiated manner. Thus many solutions have emerged with different proposals for better resources' integration, interoperability and persistence in order to improve their use and sharing on social networks. Based on these aspects, this paper demonstrates the possibility of the integration of multimedia features and dynamically negotiated in a collaborative environment. The proposed integration occurs in an ontological level, and allows users to find multimedia resources through intelligent search using the semantics of each particular user in a secure manner.

DEMOCRATIZAÇÃO DOS AVANÇOS TECNOLÓGICOS E FUNÇÃO SOCIAL DAS ENGENHARIAS

Juliano Batista dos Santos, Gabriel Antunes Pinheiro, Sérgio Luís Mendes

In the current model of the informational society, the technology presents itself as protagonist of the new way of life in contemporary society. Technology and information have become properties to be consumed. This communication aims to defend technology as the heritage of humanity and information as a legitimate right of the individual. Therefore, technological advances should not have their access restricted to large corporations, but they have to be of public domain and use. Engineering is part of a society that aims mainly concentrating rent. The change in the profile of the formation of engineering student is crucial for the future professionals are linked to social reality in which we live, so that they can intervene critically and transformative way. This social transformation is not only present in the democratization of technology and information, but is closely linked to the function of social engineering.

SISTEMA DE REALIDADE VIRTUAL EM AMBIENTE DE LABORATÓRIO PARA APLICAÇÕES DE INTERNET EM ENGENHARIA ELETROTÉCNICA

Manuel Travassos Valdez, Carlos Machado Ferreira, Fernando Pires Maciel Barbosa

The proper use of electrical equipment in a laboratory environment has been a matter of concern to higher education institutions. Virtual reality has the advantage of being secure and offers the user the opportunity of being presented with scenarios and conditions that may occur infrequently or may be risky. This paper presents a prototype model of virtual reality whose goal is to develop skills and competencies and has the ability to be used both as a virtual electrical manual and an educational tool for students in the first year of an Electrical Engineering course. A description of the development of the model and scenarios is presented. The potential of virtual reality is stressed as being of major usefulness in future study and work scenarios. The authors consider that this prototype may increase the competence and ability of students in a laboratory environment and provide them with new testing processes.

APLICAÇÃO DE PROGRAMAS DE MODELAÇÃO 3D NA ANÁLISE DO CÁLCULO LUMINOTÉCNICO DE EXTERIORES

Filipe M. M. Raminhos, Manuel Travassos Valdez, Carlos Machado Ferreira

This study aims to demonstrate the effective use of programs for 3D modeling, such as 3dsMax, Archicad or AutoCAD, implementation and analysis of projects, for the calculation of technical lighting projects exterior, through the calculation program of technical lighting projects Dialux. Lighting simulation depends on the geometry of space, of its object and textures, among others. Computational tools are an important support in the lighting simulation design being able to modeling and represent, with great precision, the complexity of optical phenomena, in order to allow a virtual experimentation of solutions and to assist in the pursuit for those solutions. It is recognized the importance of observing 3D models as a way of improving communication between the designers, customers and other participants in the development of the project, representing thus a valuable support for obtaining solutions closer to reality, being a powerful tool, quick, easy and of effective understanding.

RELIGIÃO NAS PRÁTICAS EDUCATIVAS E NOS CURRÍCULOS DA EDUCAÇÃO TECNOLÓGICA: UMA QUESTÃO EM ABERTO

Maria Aparecida de Castro

We propose to shed light on the complex relationship of religion and education by analyzing the role of religion of the students in the educational practices in the technology education curricula, which includes professionalization. We try to understand the challenges Federal Institute of Education, Science and Technology of Goiás (IFG) face to (dis) consider the religious views of its students in their educational practices and everyday in their curricula. We have take in a brief chart of the discussions regarding the changes education / schooling and curriculum area went through in recent years, highlighting the presence of religion in such scenario. We

are interested in understanding whether the religiosity of the students should be considered or ignored in the planning of educational practices and the development of curricula of educational technology, since it is teaching to professionalization and acquisition of knowledge, in which instrumental spirituality, religion do not have room.

A DERIVADA COMO TAXA DE VARIAÇÃO EM UM CURSO DE ENGENHARIA ELÉTRICA: IMAGEM CONCEITUAL E DEFINIÇÃO CONCEITUAL

Samira Domingos Costa, Viviane Cota Silva

This study aims to investigate aspects related to image and conceptual definition for the concept of derivative, when interpreted as a rate of change for students of Electrical Engineering of an educational institution in the state of Minas Gerais. The conceptual definition are words used to explain a concept, and it can often be learned by rote by the student. Conceptual image consists of all the cognitive structure of the mind of the individual who is associated with a given concept. The people surveyed were students who obtained grade of 85 points or more in Calculus I. The method used was a questionnaire applied to pupils. The results show that, in general, know how to apply the rules, yet deficient when exercises involve the application of the concept of derivative.

Session PT3B

UMA ABORDAGEM DO GERENCIAMENTO DE PROCESSOS DE NEGÓCIO NOS TRABALHOS DE CONCLUSÃO DE CURSO

Ricardo Villarroel Dávalos, Maria Inés Castineira

The application of Business Process Management (BPM) in the Course Conclusion's Work (CCW) of the engineering and informatics courses at University of Santa Catarina's South - Unisul, presents like an opportunity to reflect the benefits that would bring a management of process focused to results. The problematic in the CCW's presents the fact that these companies don't have knowledge of BPM and tools that support it, and of the financial conditions are limited too for carry out applications of that kind. The main objective of this paper is to present some experiences on orientation of three CCW's that applied BPM on sector companies of Technology Information's service, software development and ice cream fabrication. The main contribution of this work is related to the use of resources and procedures needed to support an effective process management.

MAPA DE ATIVIDADES COLABORATIVO

Ricardo O. Serra Negra, Demétrio Renó Magalhães, Francisco Antonio F. Reinaldo

The project that is under development is a collaborative activity map, where the overall goal is to use this tool constructs courses so as to face away, but over the course of the project it was realized that it can also be used for area developing systems based on the principles of Software Engineering. According to the basic principles of Software Engineering, to develop some system is necessary to follow some steps, such as the description of the mini-world, lists of functional requirements analysis, project risk, project schedule, among others. And using the map activity, the developer can see in a more clear and simple the correct sequence for developing systems.

APLICAÇÕES DE GAMIFICAÇÃO E TÉCNICAS DE MOTIVAÇÃO À APRENDIZAGEM DA METODOLOGIA ÁGIL SCRUM

Alexandre Fekettia Loriggio, Victor Mitsunaga Farias, Pollyana Notargiacomo Mustaro

The process of Gamification is the use of game design techniques in non-game contexts and this article presents one analysis of the game elements that can be applied in other situations, as well as examples of Gamification in different areas. This prospect grounded the study of its applications in educational contexts related to engineering and computing courses, more specifically the learning of agile methods. Among these, the agile method Scrum was chosen, due to its orientation towards teamwork and communication, in order to achieve a motivational environment.

ESMALTES CERÂMICOS ORGÂNICOS E AS QUESTÕES DE SUSTENTABILIDADE

Solange Maria Leão Gonçalves, Flávia Raiane de Carvalho

Some agronomic residues represent the possibility of production of ceramic glazes. The banana plant, pseudo stem and leave, is a residue that presents this possibility from its ashes. Considering the raw material and aspects related to its treatment, one can obtain a good quality of ceramic glaze from renewable resources. The production of the glaze consists essentially in mixing the clay

with water and ash, which may or may not contain additional minerals, and the burning is to be conducted on test specimens of white and red clay, at a temperature of approximately 1200 ° C. The difference in the colors of the ceramics in the specimens influence the color of the glaze. Despite the great diversity of chemical ceramic glazes, searching through the ashes for the production of glazes justifies itself in this work, to minimize environmental impacts.

OBJETOS DE APRENDIZAGEM PARA ENSINO DE CIRCUITOS ELÉTRICOS EM REGIME ESTACIONÁRIO COM O USO DE NÚMEROS COMPLEXOS EM UM CURSO DE ENGENHARIA ELÉTRICA

Sandra M. D. Stump, Celina A. A. P. Abar

The introduction to the teaching and learning process has worried many professionals in the most various educational areas, who try to find different alternatives to overcome difficulties, mainly in class. The real understanding of the relation among the electrical quantities is determinative for the development of a professional and this is exactly the purpose of the use of the resources, stimulating the significant learning and enhancing the methods of analysis. The Learning Objects, with the necessary adjustments, are used as support to the construction of mathematical concepts related to the analysis of circuits under stationary regime, which, for involving electrical quantities, such as tension and electrical current, require the solution of sinus and cosinus equations, which are not always easy to be solved. The present work is based on the theory about Registration of Semiotic Representation, by Raymond Duval, specifically about the semiotic and cognitive organization of the graphic representations.

SISTEMA INTELIGENTE DE LOGÍSTICA DE TRANSPORTE OFFSHORE

Daniel Arruda Frederico Ramos, Gerson Bartholo de Alcântara, Iran Teixeira de Oliveira, Jefferson Américo Souza Cena, Marcelo Silva

Actually there is a logistic problem in the transport operations and extraction of stored fluids in oil rigs where most of the time a rig needs an alleviation ship and as the choice of the ship isn't optimized generates a delay and a high financial cost. In a next future with the pre-salt exploration the amount of platforms and ships will increase requiring a bigger logistic control in order to reduce costs. The target is create a system that helps in the alleviation ships designation to attend the different solicitations of oil rigs reducing costs and time in the process. The system will use an artificial intelligence algorithm based on decision theory using a transport model where it is possible to reach an optimal solution for the logistics process.

O PROCESSO DE CONSTRUÇÃO DE UM REATOR ARTESANAL PARA PRODUÇÃO DE BIODIESEL

Alessandro Ricardo Stange, André Escafura, Diego Mureb Quesada, Marcelo Silva, Robson da Cunha Santos, Vitor Hugo Pereira Junior

The search for fuel to generate power, not harming the environment while contributing to the economy, to the extent that renewables offer greater benefits to consumers, has become the object of new technologies used in the production of biodiesel and ethanol. The present study focuses its analysis as axis, biofuels, pointing out the major advances in the field of research in Brazil, as well as their costs, advantages and benefits to the industry, which increasingly has sought alternative forms of development that do not harm the environment and at the same time collaborate to global sustainability. Construction of the reactor handmade 20 liter, reveals the simplicity of the process of production of Biodiesel.

VIABILIDADE TÉCNICA, ECONÔMICA E AMBIENTAL DO ASFALTO BORRACHA

Cristiane S. Lukschal Frauches, Fábio Felipe de Sá, Nathália Pereira Lima, Marcelo Silva

Due to climate change on our planet, there is now a big concern in educating society about the recycling. A great villain of the environment is the inappropriate disposal of tires not available, which cannot be retreaded, in rivers, landfills, forests, roads, causing pollution and disease, since it takes about 600 years to decompose and can become breeding dengue gnat, for example. The project objective is to verify the possibility of a practical, economical and environmentally by recycling tires for rubber-tire manufacturing, in which part of the composition of the asphalt is complemented by tire rubber powder recycled, avoiding the environmental impact by garbage discarded. This asphalt is superior to common, with a lifetime larger, and your high viscosity reduces the possibility of fractures, among other qualities.

Session PT4A

CONTROLE DISTRIBUÍDO COM TRANSDUTORES ORIENTADOS A SERVIÇOS

Alexandre Alves de Lima Ribeiro, Alexandre César Rodrigues da Silva

This paper presents an architecture that allows the interconnection of smart transducers as standard services. For this purpose are investigated patterns of smart transducers networking, embedded platforms and service oriented architectures. Some results of implementations and mappings transducers RESTful services in XML and JSON are presented. As example is presented a distributed control application where the elements of a closed-loop plant are services on a transducer networking.

DESENVOLVIMENTO DE UM INCLINÔMETRO DIGITAL INTERATIVO PARA A VISUALIZAÇÃO DE ÂNGULOS TRIGONOMÉTRICOS

Alex Pereira Mattos, Alexandre César Rodrigues da Silva

This paper presents the development of a digital inclinometer based on inertial sensor, accelerometer type. In the development of digital inclinometer, it was used a microcontroller, an accelerometer and a computer. The system was implemented to allow a friendly interaction with the user, so that knowledge of trigonometry can be absorbed in a playful and uncomplicated. The system also has difficulty levels allowing the user to improve their performance.

APROXIMAÇÃO DA FUNÇÃO TANGENTE HIPERBÓLICA EM HARDWARE

Maicon A. Sartin, Alexandre César Rodrigues da Silva

The ANN (artificial neural networks) are widely used in various applications in engineering, especially for troubleshooting nonlinear nature, classification and clustering, in pattern recognition, function approximation, among others. The implementation of RNA in reconfigurable devices is a major challenge, since many factors such as floating point precision, the tangent hiperbolic activation function and the area used in the FPGA are involved. This paper presents the implementation of various types of tangent hiperbolic activation function based LUT (Look-Up Tables) in order to assist in choosing the best approximation of nonlinear functions in hardware. It presents also a comparison of the results obtained with the literature currently available, and various implementation characteristics were analyzed as the area used in FPGA, and the error rate in memory access time by statistical tools CAD.

MEDIÇÃO DE TEMPERATURA E NÍVEL DO LENÇOL FREÁTICO UTILIZANDO REDE DE SENSORES SEM FIO

Tércio Alberto dos Santos Filho, Alexandre César Rodrigues da Silva

This paper presents the development of a client node in wireless sensor network that performs the acquisition of temperature and level of groundwater. The network node was developed employing a routable XBee-Pro module, a temperature sensor LM35, a pressure sensor MPX5700DP and a microcontroller ATmega8. The system is able to monitor changes in the level of groundwater can be adapted for use in rivers and lakes for the issuance of alert for possible flooding. The network node operates autonomously and can be installed in locations with difficult access; it has autonomy to operate for long periods of time. The information obtained by the sensor node is sent to software installed on a portable microcomputer. This remote monitoring system will allow researchers to examine climate change in regions difficult to access through an online system.

METODOLOGIA PARA SÍNTESE AUTOMÁTICA DE MÁQUINAS DE ESTADOS FINITOS BASEADA EM DESCRIÇÃO EM ALTO NÍVEL DE ABSTRAÇÃO

Eduardo Lopes da Cruz, Tiago da Silva Almeida, Alexandre César Rodrigues da Silva

This paper present a methodology of synthesis of descriptions in high-level of abstraction for finite state machines. The synthesis process has a tools collection to perform the simulation, the reading the relevant instructions, the conversion of this instructions, the minimization and the generation of code and hardware implementation. To evaluate the methodology was used the line code HDB1 as case study. The results were obtained a minimum circuit of low cost.

A UTILIZAÇÃO DO DISPOSITIVO DE IDENTIFICAÇÃO POR RADIO FREQUÊNCIA (RFID) COMO FERRAMENTA DA COMPUTAÇÃO UBÍQUA

Bruno F. Dobner, Francisco B. Rodrigues, Renata S. França

The present study objective is to present RFID device as a tool of Ubiquitous Computing by explaining shortly the impacts which may affect human privacy unless there is an appropriate legislation. The uses of implantable RFID devices in human beings have useful purposes to society such as storage of medical history and tracking kidnapped people. This study was based on literature review and emphasizes that personal information exposition is a worrying issue and must be analyzed. However, there are no specific privacy laws related to the use of RFID device, allowing judges to analyze facts based on a specific case and not based on law.

IMPLANTAÇÃO DE TÉCNICAS DE GESTÃO DO CONHECIMENTO E GERENCIAMENTO DE ROTINA PARA MELHORIA DE GESTÃO E EFICÁCIA: ESTUDO DE CASO EM UM PERIÓDICO CIENTÍFICO

José Augusto Campos Garcia, João Pedro Albino, José de Souza Rodrigues

This work aims to present a research involving the improvement of the managerial processes of a scientific periodical using the Work Routines Management techniques and Knowledge Management principles. The processes will be formalized, analyzed and standardized, for the elaboration of manuals for the processes execution. Also will be recorded the editorial team members' learning, through the lessons learned and best practices developed with the experience. With the execution of the research, expect to improve the periodic managerial process and retain the knowledge generated from the work developed for the editorial team, as well as to contribute to the literature in Production Management and Knowledge Management.

Session PT4B

EDUCAÇÃO ESPECIAL: A TECNOLOGIA ASSISTIVA NO ATENDIMENTO EDUCACIONAL ESPECIALIZADO

Victor Freitas de Azeredo Barros, Renata Luiza da Costa

It is estimated that 10% of the population has some form of disability. Assistive technology combined with a quality education in schools can help fill a large gap of knowledge and respect for those whose/who are special needs people (PSN). Moreover, it allows to provide better quality of life and contributes to the process of social and digital inclusion of this group. However, to make appropriate use of assistive technology at school, there must be empowerment of individuals who will deal directly with such technology and such a group. Bringing the school context, the current project presents a discussion about the situation of human resources qualified for Special Education in Brazil.

CONSTRUÇÃO DE OBJETO DE APRENDIZAGEM PARA ENSINO DE EDUCAÇÃO AMBIENTAL

Victor Freitas de Azeredo Barros, Renata Luiza da Costa, Deovaldo Montagnini de Castro Filho

The use of technology in education has contributed, day after day, in the teaching-learning process making it more accessible both for students and for teachers. Learning objects (OA) is an example of this technology. The OA is an educational material entity, digital or not, that can be used, reused and referenced for some manifestation of teaching and learning supported by technology resources, using media such as images, videos and simulations, and aims to promote and encourage learning in all areas of knowledge. Given the above, this project arises as a means of entering the OA in teaching environmental education in public schools in high school and vocational technical courses at the Federal Institute of Goiás, in the municipality of Inhumas, bringing benefits in the teaching-learning process and adding flashy and interactive skills in the classroom.

TESTE VOCACIONAL DIGITAL

Alex Santos Bandeira Barra, Victor Freitas de Azeredo Barros, João Crisóstomo de Siqueira Neto

This article is part of the research: "Vocational Digital Test" in which we have analyzed different sites/online software published in Brazil. The object is to assess how these interfaces while the reliability of their results, the efficient resolution of responses, the quality of the questions, the situations and personalities profiles of proposed tests. In order to compare their efficiency was proposed - as scientific rebuttal - apply the Vocational Test and individually interviewing each candidate.

A BIBLIOTECA E O ENSINO A DISTÂNCIA: IMPORTÂNCIA DA BIBLIOTECA VIRTUAL NOS CURSOS DE EAD DO IFG

Jhonatan Gonçalves Santos, Luana Emanuella Silva Tiarini, Maria Aparecida Rodrigues de Souza, Maria Aparecida de Castro, Flávio Adalberto Gomes, Victor Freitas de Azeredo Barros

With the spread of long distance education (DE), some students were to face some difficulties, such as the access to a library. Such students generally work and do not have time to go to a library in order to research. Thinking about such a problem, we started sketching this project. It aims to solve it by researching on ways to implement a virtual library at Federal Institute of Education, Science and Technology of Goiás (IFG).

SOB A ÓTICA DO PENSAMENTO COMPLEXO: O QUE O FRACASSO ESCOLAR DA ESCOLA PÚBLICA TEM A VER COM A ESCOLA PRIVADA?

Renata Luiza da Costa, Victor Freitas de Azeredo Barros

This article intends to present, according to the thoughts of Edgar Morin, the reflections of the historical and cultural context of student life teacher in school practice himself in order to show the complex structure of training that actually predates the time of graduation. Assuming that teacher training does not begin a degree course, but the training staff and school during the life of the individual, we analyzed data from a private school in the interior of Goiás, concluding that the major shortcomings of the kindergarten teachers are cultural and scientific shortcomings that are reflected in the classroom, the university's child, feeding the cycle of poor training, personal and professional after.

O PROCESSO DE CONSTRUÇÃO TECNO-ARTÍSTICA POR MEIO DA RECICLAGEM

Maria do Carmo Jampaulo Plácido Palhaci, Ricardo Nicola, Luiz Antonio Vasques Hellmeister

The recycling in Engineering can be used for reuse of material disposed remains into the environment. The recycling of construction residues comes from antique and was applied in the reconstruction of Europe after World War II. From the environmental point of view, the main problem with the residues that can be recycled, is related to its irregular deposition and the large volumes produced. In this article we aim to approach the recycling techniques through literature surveys and propose techno-artistic works that solve the problem of wasting residues in our planet.

GERAÇÃO Z E O MERCADO DE TRABALHO: EXPECTATIVAS E DESENCONTROS

Nilton Marlúcio de Arruda

This article analyzes the optimal degree of alignment that must exist between the strategic positioning of a particular company and the expectations revealed by young people who are coming to market consumer and labor. For this purpose, we used the sustainability reports of some of the organizations and research as "Company of Dreams." The proposal is to compare the statements of some companies - the most cited in the survey - with the wishes of the respondents in respect mainly to the values and beliefs, behaviors, work environment, leadership and career success.

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