ICECE 2015

Technology Education for the Future:
from simple Growth to Sustainable Quality of Living

May 10 - 13, 2015
Žilina, Slovakia

Edited by
Claudio da Rocha Brito
Melany M. Ciampi

IEEE

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Research Council

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BOOK OF ABSTRACTS

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Message from the General Chair

With great pride and honor I take this opportunity to welcome all the participants of **ICECE'2015 – IX International Conference on Engineering and Computer Education** for a very productive period of discussions. This 9th edition of **ICECE** happens in **Žilina**, the metropolis of Northwest Slovakia, on **May 10 to 13, 2015.**

The congress theme **"Technology Education for the Future: from simple Growth to Sustainable Quality of Living"** has received many contributions of quality from different parts of the globe and we are sure that it will be a success like the past congresses. It seeks to provide a platform for participants to deepen their knowledge showing their ideas, opinions and professionals contributions in lectures with international specialists in their areas of performance, plenary sessions, and presentations of works and workshops of high quality.

Žilina is a center of northwest Slovakia and one of the largest towns of the Slovak Republic. It is a seat of administration of the Žilina Region, one of the 8 regions of the Slovak Republic. The Region of Žilina involves 4 historical regions: Kysuce, Liptov, Orava and Turiec. It consists of the following districts: Bytča, Čadca, Dolný Kubín, Kysucké Nové Mesto, Liptovský Mikuláš, Martin, Námestovo, Ružomerok, Turčianske Teplice, Tvrdošín and Žilina. The District of Žilina covers an area of 815 sq. km, and has 50 villages and 3 towns Žilina, Rajec and Rajecké Teplice.

As the General Chair of **ICECE'2015 – IX International Conference on Engineering and Computer Education**, on behalf of **COPEC** team I am glad to thank first of all the **University of Žilina** 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. Tatiana Corejova,** Local Chair of **ICECE'2015**, without whom this event would not have been possible. I would like also to thank the vice-dean for science and research **Prof. Radovan Madleňák**, Vice Local Chair of **ICECE'2015** for their great work.

The **ICECE'2015 - International Conference on Engineering and Computer Education** is organized by **COPEC – Science and Education Research Council** Technical Cooperation (in alphabetical order): AAMP (Fishing Museum Friends Society), ABENC (Brazilian Society of Civil Engineers), 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), ISTEC (Ibero-American Science & Technology Education Consortium), OERN (Institute of Engineers of Portugal – North Region), Porto Gente (PortFolk), RBE (Brazilian Network of Engineering), RCI (Réseau Carthagène d'Ingénierie), SBA (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), WCCA (World Council on Communication and Arts) and WCSEIT (World Council on Systems Engineering and Information Technology).

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

Before I close, I would like to thank each of you for attending our congress and bringing your expertise to our gathering the 9th ICECE congress meeting. You are truly our greatest asset and we could not accomplish what we do without your collaboration and participation.

Welcome to **ICECE'2015**.

Thank you all

<div align="right">

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

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Message from the Technical Program Chair

On behalf of the Technical Program Committee of **ICECE'2015 – IX International Conference on Engineering and Computer Education** I want to start thanking all the valuable contributions of the authors. The 9th edition of **ICECE** is a conference that serves as a multi-disciplinary forum for the discussion and exchange of information on the research, development, and applications on all topics related to engineering, and computer education.

The local of the event is a stunning city of historical value with a rich folk culture. A place to visit for its architecture, craft stores, castle and museums, Žilina a city of Slovakia, on East of Europe with a dynamic economy having the second biggest Slovak commercial and industrial chamber.

I also take the opportunity to thank the reviewers for their outstanding work reviewing all the papers. Equally important is to thank for the contributions of workshops leaders and plenary session's lecturers bringing interesting topics related to the theme **"Technology Education for the Future: from simple Growth to Sustainable Quality of Living"**.

Once again I would like to thank all the people involved in the Congress and for making this a truly great congress.

Thank you all

<div align="right">

Prof. Dr. Melany M. Ciampi
TECHNICAL PROGRAM CHAIR
President of SHERO

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Technology Education for the Future:
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PROGRAM

May 10 - 13, 2015
Žilina, Slovakia

IEEE

COPEC

Edited by
Claudio da Rocha Brito
Melany M. Ciampi

ICECE'2015 – Program at Glance

Time	Sunday 10	Monday 11	Tuesday 12	Wednesday 13	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	Plenary Session III	Visit to University	9:00 am 9:30 am
9:30 am 10:00 am		Plenary Session I			9:30 am 10:00 am
10:00 am 10:30 am					10:00 am 10:30 am
10:30 am 11:00 am		Coffee Break	Coffee Break	Coffee Break	10:30 am 11:00 am
11:00 am 11:30 am		Plenary Session II	Technical Session PT2	Visit to University	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		Lunch	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		Technical Session EM3	Technical Session PT3	Workshop	2:30 pm 3:00 pm
3:00 pm 3:30 pm	Cultural Session				3:00 pm 3:30 pm
3:30 pm 4:00 pm					3:30 pm 4:00 pm
4:00 pm 4:30 pm		Coffee Break	Coffee Break	Coffee Break	4:00 pm 4:30 pm
4:30 pm 5:00 pm		Technical Session PM4	Technical Session PT4	Workshop	4:30 pm 5:00 pm
5:00 pm 5:30 pm	Cocktail Party				5:00 pm 5:30 pm
5:30 pm 6:00 pm					5:30 pm 6:00 pm
6:00 pm 6:30 pm	Free	Free	Closing Session	Free	6:00 pm 6:30 pm
6:30 pm 7:00 pm			Free		6:30 pm 7:00 pm
7:00 pm 7:30 pm					7:00 pm 7:30 pm
7:30 pm 8:00 pm					7:30 pm 8:00 pm
8:00 pm 8:30 pm					8:00 pm 8:30 pm
8:30 pm 9:00 pm			Banquet (for adhesion)		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 **LDT**
Where:
L – is a letter that designates the language of the session:
      E – designates English sessions and papers;
      P – designates Portuguese 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);

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).

Session Begins	H:00	H:30
First paper	H:05	H:35
Second Paper	H:17	H:47
Third Paper	H:29	H:59
Fourth Paper	H:41	(H+1):11
Fifth paper	H:53	(H+1):23
Sixth paper	(H+1):05	(H+1):35
Seventh paper	(H+1):17	(H+1):47
Session Ends	(H+1):29	(H+1):59

Sunday – May, 10

THE REGION OF ZILINA adjoins Poland to the north and the Czech Republic to the west. Sixty percent of the land is covered by forests. The region is made up of valleys surrounded by mountain ranges – the Western Tatras, the Low Tatras, etc.

The geographical diversity of this region, the beauty of its nature and the richness of its **cultural and historical monuments** make it an ideal area for top-quality tourism. The mountain ranges are perfect for year-round sports. There is hunting and fishing. The dams of Oravska prichrada and Liptovska Mara offer good opportunities for **water sports**. The region is also interesting because of **itsthermal baths** (Rajecke Teplice, Lucky, Turcianske Teplice, Korytnica and Lubochna). The **caves** – Demanovska ladova, jaskyna Slobody, Vazecka jaskyna -- located in the Low Tatras, are famous the world over. This region also has **4 natural reserves**, the Mala Fatra National Park, 14 national cultural monuments and more than 140 cultural monuments.

Large cities: Zilina, Martin, Ruzomberok, Liptovsky Mikulas, …

ZILINA

ZILINA is a city located in the center of Northwest Slovakia at the confluence of the Vah and the Kysuca. By population, it is the third largest city of Slovakia. The most well-known monument in the city and the surrounding areas is the **Budatin Castle**, located to the north of the town, above the two rivers. The town square is surrounded by arcaded burgher houses from the 16th and 17th centuries. The Church of the Holy Trinity, next to which is a Renaissance belfry, the Burian Tower (1530), dominates the Old Town.

The first mention of **Žilina as a city** comes from the year 1312, although legally Žilina became a city before the year 1300. On 7 May 1381 the Slovak population gained equality with German colonists in charter Privilegium pro Slavis (issued by Hungarian and Polish King Louis I.). During this period originates Žilinská mestská kniha (Žilina City Paper), an important literary and legal relic. The first inscription in German comes from 1378 and the first inscription in Slovak language comes from the year 1451. The last inscription was written in 1561.

In the late 19th century had a great importance for the development of the city and surroundings the construction of railway lines. Košice-Bohuminská railroad was completed on 1872 and the railroad to Bratislava was finished in 1883. Thus, Žilina became an important transport hub, wha created favorable conditions for the emergence of important companies.

Žilina experienced a rapid development after the World War II. Many factories, schools and research institutes were founded there. In 1960 the College of Transport was established, the current **University of Žilina**. In the present, Žilina is a complex multifunctional city and with its surroundings is the third most important industrial center in Slovakia.

Let's enjoy this marvelous city full of history, culture and science in a remarkable tour!

We will meet at 3 p.m. in front of Museum of Art Zilina (http://www.pgu.sk), then we will visit that Museum. After museum' visit we will take a short city tour (3:30 p.m. - 4:30 p.m.).

Source of information and pictures: http://www.slovakia.org/zilina.htm and http://www.slovak-republic.org/zilina/#general

COCKTAIL PARTY

All the participants are welcome to join us for the "Cocktail Party" on Sunday at 5:00 pm. It is the opportunity to get in touch with other colleagues and make new friends in a pleasant historical and cultural environment.

Monday – May, 11

8:30 am – 5:30 pm
REGISTRATION

The conference will happen in the meeting room of Scientific Board of the University of Žilina. The address is Zasadačka VR ŽU. Vysokoškolákov 26. 010 08 Žilina and GPS coordinates are: 49.209123, 18.754754.

9:00 am – 9:30 am
OPENING SESSION
Chair: **Prof. Dr. Claudio da Rocha Brito** – General Chair of ICECE2015
Prof. Dr. Melany M. Ciampi – Technical Program Chair of ICECE2015
Prof. Dr. Tatiana Čorejová – Local Chair of ICECE'2015 and Rector of University of Žilina
Prof. Dr. Radovan Madleňák – Vice Local Chair of ICECE'2015 and Vice-Dean for Science and Research of University of Žilina

9:30 am – 10:30 am
PLENARY SESSION I
Chair: **Prof. Dr. Claudio da Rocha Brito** – President of COPEC
TECHNOLOGY EDUCATION FOR THE FUTURE: FROM SIMPLE GROWTH TO SUSTAINABLE QUALITY OF LIVING
Speaker: **Prof. Dr. Melany M. Ciampi** – President of SHERO

10:30 am – 11:00 am
Coffee Break

11:00 am – 12:30 pm
PLENARY SESSION II
Chair: **Prof. Dr. Radovan Madleňák** – Vice Local Chair of ICECE'2015 and Vice-Dean for Science and Research of University of Žilina
FUNCTIONAL EUROPEAN DIMENSION OF EDUCATION QUALITY ASSURANCE IN SLOVAK UNIVERSITY CONDITIONS
Speaker: **Prof. Dr. Tatiana Čorejová** – Local Chair of ICECE'2015 and Rector of University of Žilina

12:30 pm – 2:30 pm
LUNCH

2:30 pm – 4:00 pm
TECHNICAL SESSION EM3
Chairs
Eduard Belyaev
Clara Amelia de Oliveira

4:00 pm – 4:30 pm
Coffee Break

4:30 pm – 6:00 pm
TECHNICAL SESSION PM4
Chairs
Rogéria Oliane
Thiago Bevengnú

Tuesday – May, 12

8:30 am – 5:30 pm
REGISTRATION

9:00 am – 10:30 am
PLENARY SESSION III
Chair: **Prof. Dr. Melany M. Ciampi** – President of SHERO
PEDAGOGICAL, SCIENCE AND RESEARCH ACTIVITIES OF FACULTY OF OPERATION AND ECONOMICS OF TRANSPORT AND COMMUNICATIONS
Speaker: **Prof. Dr. Martin Bugaj** – Vice-Dean for International Affairs of University of Žilina

10:30 am – 11:00 am
Coffee Break

11:00 am – 12:30 pm
TECHNICAL SESSION PT2
Chairs
José Carlos Eduardo da Silva
Dulcinéia Gonçalves Ferreira Pires

12:30 pm – 2:30 pm
LUNCH

2:30 pm – 4:00 pm
TECHNICAL SESSION PT3
Chairs
Caroline Domingues Porto do Nascimento Barbieri
Vânia Cristina Pires Nogueira Valente

4:00 pm – 4:30 pm
Coffee Break

4:30 pm – 6:00 pm
TECHNICAL SESSION PT4
Chairs
Edson Santos Acco
João Lucas Mattje Wentz

6:00 pm – 7:00 pm
CLOSING SESSION
Chair: **Prof. Dr. Claudio da Rocha Brito** – General Chair of ICECE'2015
Prof. Dr. Melany M. Ciampi – Technical Program Chair of ICECE'2015
Prof. Dr. Tatiana Čorejová – Local Chair of ICECE'2015 and Rector of University of Žilina
Prof. Dr. Radovan Madleňák – Vice Local Chair of ICECE'2015 and Vice-Dean for Science and Research of University of Žilina

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 – May, 13

8:30 am – 5:30 pm
REGISTRATION

9:00 am – 12:30 pm
VISIT TO UNIVERSITY

Different form of Education supported by ICT: Co-working students-researches and practices in Laboratory Excursion at university facilities that providing ICT support for pedagogical activities. It will start at 9:30 in AIDC LAB (Laboratory for automatic identification), then 10:00 Inland ship-simulator and 11:00 CEIT (Central European Institute of Technology).
Prof. Dr. Radovan Madleňák – Vice Local Chair of ICECE'2015 and Vice-Dean for Science and Research of University of Žilina

12:30 pm – 2:30 pm
LUNCH

2:30 pm – 6:00 pm
WORKSHOP
TEACHING QUALIFICATION IN ENGINEERING AND TECHNOLOGY EDUCATION UNDER COMPLEX APPROACH
Prof. Dr. Clara Amelia de Oliveira – INE – CTC – Federal University of Santa Catarina, Florianópolis, SC, Brazil

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ABSTRACTS

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PLENARY SESSIONS

TECHNOLOGY EDUCATION FOR THE FUTURE: FROM SIMPLE GROWTH TO SUSTAINABLE QUALITY OF LIVING

Claudio da Rocha Brito, Melany M Ciampi, Victor F A Barros

Technology Education for the Future: from simple Growth to Sustainable Quality of Living leads to the notion that it means the search for ways to provide significant information and content, which can serve the future professional to perform in order to promote the development of science and technology for human welfare. A deeper understanding about life and future generations education means a truly sustainable technological use for a practice that is evolving, diverse and dynamic. It supports the education in a level that promote quality of life of present and future generations within the limits of social and natural systems. 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 recognized as a global congress.

TECHNICAL SESSION EM3

TEAMWORK COMMUNICATIVE SKILLS AND ABILITIES FORMATION IN TRAINING OF ENGINEERS FOR THE FUTURE

Irina Makarova, Rifat Khabibullin, Dmitry Zhdanov, Eduard Belyaev

This paper reveals training experience of engineers for the global companies. It is shown that foreign language skills in modern conditions turn into the significant personal and professional characteristic of a specialist. Language training gives grounds to communicative skills formation, including bilingual communication. For modern engineers a foreign language becomes an orientation tool in information space and also a professional problem solving tool in bilingual communication. An integration of language modules into the curriculum is a distinguished feature of the given training system. Thus the principle of gradual problem solving skills broadening becomes a reality. Various interactive training courses and virtual training modules are used during this training. Such approach erases speech barriers, develops ability to communicate in a foreign language and also ability to work in team.

RESEARCH AND CAPSTONE PROJECTS IN ENGINEERING AND ENGINEERING TECHNOLOGY

Walter W. Buchanan, Ali Mehrabian, Ali Rahrooh

Here are presented topics for research and capstone projects in engineering and engineering technology for undergraduate students. Robust student-based undergraduate research models are being developed by Daytona State College faculty to develop innovative and effective models to encourage participation of more undergraduate students in research programs. The objective is to create models for promoting research opportunities for Engineering and Technology (E&T) undergraduate students. Student engagement through undergraduate research and capstone projects is being conducted at Utah Valley University. At the Connecticut College of Technology, a statewide consortium of community colleges and universities, there is being administered an undergraduate research / capstone project funded through the National Science Foundation called the Life Support and Sustainable Living program. And the University of Arkansas – Little Rock is integrating undergraduate research for green energy education centered on a photovoltaic test station.

ROBUST STUDENT-BASED UNDERGRADUATE RESEARCH MODELS

Ali Mehrabian, Walter W. Buchanan, Ali Rahrooh

Here is presented the work in progress for research in engineering and engineering technology for undergraduate students. Traditional models for encouraging undergraduate participation in research projects are based primarily on the undergraduate experiences and recollections of faculty members. Today, we still rely on traditional methods and models to encourage undergraduate students of the New Millennium to conduct research. Relatively low numbers of undergraduate students currently entering Engineering and Technology (E&T) research programs,

coupled with a lack of college faculty experience with undergraduate participation in their research projects, suggests that these students are not getting the message that they are perceived as valued researchers. The ultimate goal of this study is to create models for promoting research opportunities for E&T undergraduate students. The anticipated outcomes of this study are increased participation of E&T undergraduates in research, achieving more success in research programs, and eventually increased participation of more prepared students in graduate studies.

QUALITY MANAGEMENT OF ACADEMIC RESEARCH PROJECTS

Rogério Rossi, Pollyana Notargiacomo Mustaro

Researches which are undertaken in Academic environment can generate diversified results as Scientific Reports, Articles, Monographs, Dissertations, Thesis, or other related documents. Prototypes, models, software, patents, etc. can configure related results. With a view that these results are part of scientific researches and constitute an organized formalization of controlled actions, it should be considered as a Project per se. Therefore, the issue of quality of these results are addressed accordingly the fundamentals of Project Management and specifically of Quality Management. Thus, the presented paper is undertaken from principles of PMBOK® Guide, and describes the processes related to the Quality Management for an Academic Research Project. With this approach, it is expected to contribute with elements that can be added to or adjusted on academic contexts, in order to facilitate the research planning and developing of Academic Research Project as well to define quality metrics for this kind of Projects.

AN EMPIRICAL STUDY OF THE BEHAVIOR OF A FACE RECOGNITION SYSTEM BASED ON EIGENFACES AND K-NEAREST NEIGHBORS TECHNIQUES

Fabio Abrantes Diniz, Thiago Reis da Silva, Francisco Eduardo Silva Alencar

Developing a face recognition computational model is a hard task. Extracting facial features from facial images becomes a hard when the images have different dimensions, especially in the steps of extraction and classification. In this paper, we propose an empirical study of optimization on the rate accuracy results from a facial recognition based on Eigenfaces and K-Nearest Neighbors techniques. It was investigated the following topics: images with three different dimensions, number of features (Eigenfaces), k values from K-Nearest Neighbors technique and three distance measures. Addressing the problems of image dimensionality for facial recognition, understanding which parameters are more relevant from the addressed techniques in order to enhance the accuracies rate of facial recognition were the goals of this study. Following this, it was proved from the experiments that images with 12x9 sizes produce the best facial recognition accuracies rate, using the normalized Euclidean distance and a number of Eigenfaces equals to twenty.

THE IMPORTANCE OF PRE-TREATMENT WITH ALKALINE WASH FOR THE OBTAINTION OF BIODISEL FROM VEGETABLE OIL ALOE VERA

Marcelo Silva, Barbara C. A. da Rocha, Lorran Santana, Rayanne Murras, Thaiane Mello

The importance of producing biofuels in large scale and the technical aspects required by the market have resulted in biodiesel derived from plant oil kinematic viscosity related researches. Transesterification is the most common and efficient way to reduce viscosity. Considering that it is a one-step process, it has become the simplest and most affordable method when compared to others biodiesel obtaintion processes. But further than the main trasesterification process, there are other processes that aim to reduce the impurities from raw materials which are used throughout the process. The colorless gel extracted from aloe vera, which is the focus of this work, could only adapt to the trasensterification process after it went through an alkaline wash, showing the relevance of this method when it comes to obtain the final product.

ABSTRACTION OF PROCESS MODELING LIKE SUPPORT TO REQUIREMENTS ENGINEERING TO COMPLEX SYSTEMS

André Marcos Silva, Marlon Inácio Lauers da Silva

The requirements for non-conventional systems tends to be a critical process and often prone to failure, particularly as regards their understanding. This working progress paper describes a proposal for elucidation requirements

based on process modeling. This way, exploring processes and protocols languages like an abstraction tool during system specification. As a case study, this research involves a real environment: a flow process of electronic data interchange (EDI) in a pharmaceutical company.

BIODIESEL PRODUCTION PROCESS STARTING FROM ALOE VERA

Marcelo Silva, André E. Machado, Ana Carolina R. de Castro, Bruno Carvalho

The concern with the impact in the activities that require the use of non-renewable fuels and the increase on the demand for clean energy have made biofuels research become more notorious, thus began the search for oilseed plants that are the base for biodiesel derived from plant. To that end, priority has been given to the study of aloe vera, a plant originally found in arid or tropical regions. The raw material necessary in order to produce this biodiesel in obtained by extracting a colorless and viscous gel coming from the leaf of the aloe vera, which adapted to the transesterification process like other oils regularly used to produce biodiesel, making this work simple and feasible.

A GAME TO ASSIST RETAINING KNOWLEDGE IN CLASSROOM

Amanda Priscilla Araujo da Silva, Thiago Reis da Silva, Pedrina Celia Brasil, Sósteney Dantas, Eduardo Aranha

The purpose of this paper is to present an educational game developed to support consolidation and revision of contents in the classroom, using the competition, interactivity and dynamism of a team play as a learning tool more attractive to students. This paper describes the game origins and motivation, its elements and rules. In addition, the paper depicts an experimental application of this game in a Biomedicine class at a Brazilian federal university and reports the empirical study results.

TECHNICAL SESSION PM4

TOOL TO AID THE VISUALLY IMPAIRED IN LABORATORY CLASSES

Rogéria Oliani, Alexandre César Rodrigues da Silva, Melisa J. B. Durango, Tércio A. dos Santos Filho

The social inclusion of people with special needs is a challenge in a globalized world. To give people the right to be different and have their needs recognized and met is crucial for social development. One challenge is the inclusion of people with special needs in education, in order to prepare teachers and materials to support student, to facilitate communication and learning of these. In this work we present a tool (hardware and software) to the aid of laboratory classes for the visually impaired through the identification of equipment and different objects using RFID and Bluetooth. The hardware it is a read module and wireless data transmission fixed on the wrist of users, helping identify objects. Software developed for Android smartphones, receives the object ID and through database support, transmits to the student information about the location of objects, their characteristics and other information of educational importance of sound mode.

INTEGRATION BETWEEN EDUCATION, LEARNING AND SOIL CHARACTERISTICS ON TECHNICAL COURSE IN BUILDINGS WITH THE USE OF MENTAL MAPS

Luiz Pinheiro da Guia, Denise de Carvalho Urashima, Beatriz Totti Firmiano

The purpose of this paper is to discuss the application of mind maps by teachers and students, especially in the preparation and execution of laboratory tests proposed in Soil Mechanical discipline. To this end, we analyzed articles and books on the subject, assisted discipline of classes in question in the responsible institution, drawn up useful maps and performed a case study with students of the Technical Course in Buildings, evaluating their acceptance of method compared to others. It was observed that there was no great difference of opinion, then discussed the conditions for this result, as well, according to the texts analyzed, the beneficial effects of mental maps, inclusive for teaching in general, given the characteristics of the current generations.

IMPLEMENTATION OF NCL APPLICATION TO THE TEACHING PRODUCTION TECHNOLOGIES OF SUGAR AND ALCOHOL

Rodrigo Cândido Borges, Danila Fernandes Mendonça, Humberto M. Barros Filho

Brazil is at the top of world production of sugar and alcohol. Faced with such a case is increasing demand in this area by qualified and able to perform technical activities in these industry line professionals. Seen the difficulties in understanding the varied processes of sugar and alcohol production, this project presents the implementation of an application for teaching technologies involved in this production base. This program works as an educational object shows in the products and byproducts derived from cane sugar, being developed at NCL programming language. NCL declarative applications enable encapsulate in your source code a range of services, bringing the final hypermedia consequent robustness.

APLICAÇÃO DO MÉTODO MULTICRITÉRIO AHP NA OBSERVAÇÃO DOS MOTIVOS DA EVASÃO ESCOLAR

Ricardo R. D. de Lima, Márcia C. R. Lopes, Victor F A Barros, Reginaldo de F. G. Pacheco, Danila Fernandes Mendonça, Pedro H. de F. Reis

Since truancy has been a constant challenge for educational institutions in Brazil, this project is based on theoretical and practical studies related to truancy. The multicriteria method AHP was used in the ranking of reasons and avoidance of factors validating the methodology. Thus, a profile of the escapees was traced and it was found that the method can assist in the educational policies of the Federal Institute of Goiás (IFG) - Campus Inhumas. The results obtained were satisfactory and the method adopted for coordinating student support (CAPEDISC), which together with the institution psychologist found that actually reported by the reasons are proven escaped in comparison with the results of the method. Soon, you can enlarge efficient and effective strategies to combat truancy.

FERRAMENTA PARA AQUISIÇÃO E ANÁLISE DE SINAIS MIOELÉTRICOS

Thiago Bevengnú, Jocarly Patrocínio de Souza

This work presents a tool for acquisition and analysis of myoelectric signals through the surface electromyography (EMGS) for the study of muscle behavior of the human body. The signal from the muscles is captured by surface electrodes arranged in bipolar configuration. It is amplified, filtered, sampled and subjected to digital processing for evaluation of relationship EMG vs Strength and EMG vs Fatigue. This relationship is very important at diagnostic pathologies and development of prostheses. The analysis is performed by comparing EMG signal, muscle contraction time, position and angular velocity joints. To analyze the signals in the time domain the EMG signal is rectified and it sintensity is calculated from the RMS (Root Mean Square) value. The FFT (Fast Fourier Transform) is used to identify the median frequency of the signals.

MODELO PARA CENTRO DE FORMAÇÃO E TREINAMENTO DE PROFISSIONAIS DAS ÁREAS DE TECNOLOGIA E ENGENHARIA

Luiz Heleno Moreira Duque

A new requirements in professional training, especially for engineers and technology formation, represent an increasingly frequent demands of the job market. Explanation of topics on appropriate strategies to learning styles, simultaneously presenting rules for e-learning and online learning are adduced in this proposal and work. Another relevant point to self-sustainability courses, is based on good budget plan. It is the aim of this work to build a proposed model of EAD education courses for the technology in line with modern principles of self-sustaining enterprises and focus on business opportunities. This design offers services in EAD learning, consulting and advisory services for training in high quality standard. Present a proposal for education for technology and focus on business opportunities and to offer online learning environments built by trainers (teachers and tutors) in the use of high-tech production systems installed in Brazil.

PROPOSTA DE CENTRO DE DIAGNÓSTICOS E CERTIFICAÇÃO DE QUALIDADE DE ENGENHARIA EM SISTEMAS PRODUTIVOS

Luiz Heleno Moreira Duque

A point relevant to self-sustainability courses and enterprise in education is founded on good budget plan and good economic and strategic management of the enterprise. It is the aim of this work to build a proposed model of distance education courses for the technology under modern principles and good practice in the management, focusing on business opportunities. This project presents a proposal, along the lines supported by legislation and focusing on commercial opportunities for online learning. The project is designed to be undertaken in its infrastructure by the government (federal, state and / or municipal). An analysis of relevant variables and costs in the determination of cash flows in a twelve-years (medium-term investments in education) shows that the project presents Net Present Value, Internal Rate of Return attractive and favorable investment Payback. This ensures the project viability and attractiveness to investment in a low-inflation scenario.

METODOLOGIA DE AVALIAÇÃO EDUCACIONAL COM O USO DE SIMULADORES 3D EM AMBIENTES VIRTUAIS DE APRENDIZAGEM PARA A ENGENHARIA

Enrique Sérgio Blanco, Fernando Ricardo Gambetta Schirmbeck

The educational simulators are developed for engineering to allow users to have experience with similar equipment and processes which they will find in the industrial environment. Our proposal is to present an assessment methodology that identifies the level of user performance, based on the skills necessary to solve problem situations using 3D simulators embedded in virtual learning environments. With the application of Apprenticeship Education Methodology developed by SENAI (National Service of Industrial Apprenticeship Service), it solves the current deficiency a lot of educational simulators that do not provide an effective method of evaluating student performance, when it interacts with the educational simulator. The current methodology records, analyzes and evaluates all learning route the student interacts with the 3D simulators, through criteria defined in accordance with the technical skills required for the professional industrial automation sector in Brazil.

LINGUAGEM VISUAL EM PROJETOS ARQUITETÔNICOS PARA DIDÁTICA EXTRACURRICULAR NO CURSO DE ENGENHARIA CIVIL

Marco Antonio Rossi

The technique with the information standards and construction standards for the project is necessary to enable the professional to be understood in any region of the country, as well as understanding the drawing boards. Standards and techniques are presented to students enrolled in the Civil Engineering Course of UNESP - Bauru / SP, which is presented in the Education Plan of Civil Basic Drawing discipline. However, twelve students were applied to other volunteers knowledge focused on visual communication, visual composition with the visual elements that were adopted in existing projects facades and also instigating creativity methods. The results were entered into the concept that all forms of expression considering the experience of unity of each student with the creative process, which are presented in the proposals for facades with strong influence in straight lines and drawing techniques.

TECHNICAL SESSION PT2

USO DA ABP NO ENSINO DAS FUNÇÕES MATEMÁTICAS COM O USO DO SOFTWARE GEOGEBRA

José Carlos Eduardo da Silva, Juliano Schimiguel

This comparative study between two first-year high school classes, a Brazilian public school, in which we use traditional approach and use another approach PBL + Software Geogebra, both developed the same content polynomial functions. We show the positive and negative aspects of the use of ICTs in education; using these tools integrated into the curriculum and the practice is desirable. Using Geogebra as a learning resource combined with BPA, enhances learning? We use action research where the researcher community integrates to watch her. In PBL approach, the student establishes inter-relationships with their peers and their teacher proposes challenging issues resolved in the group. We found consistent with the curriculum and current legislation, Geogebra assisted in the resolution of problems proposed, and it is desirable application of PBL to pave the way with its seven steps toward knowledge. Dewey and Bruner underlay the study.

ANÁLISE DA EFETIVIDADE DE UM TUTOR INTELIGENTE PARA A PRÁTICA DE ENSINO A DISTÂNCIA

Dulcinéia Gonçalves Ferreira Pires, Heloísa Bueno Machado, Murilo Borges Silva, Sandrerley Ramos Pires, Sirlon Diniz Carvalho

This work aim to certificate if the use of an intelligent tutor increases the learning level in distance learning (DL). The purpose is to create a distance course using the pedagogical method based in the historical-social theory, besides this, customize a computational environment of DL to use an intelligent tutor based on artificial neural network, which establish an individual treatment to each pupil from the automatic perception of pupil skill. In contrast, prior to the course, this work will obtain the neuropsychological skill of the students in order to compare the mapped features by the actions of the intelligent tutors. The realization of the DL course will permit to obtain the adequate information to analysis and discussion of a multidisciplinary team to validate the actions of the intelligent tutor or, if necessary, establish parameters to increase the actions of intelligent tutor in a DL environment.

UM AMBIENTE GENÉRICO PARA CONSTRUÇÃO DE JOGOS DE EMPRESA

Dulcinéia Gonçalves Ferreira Pires, Sandrerley Ramos Pires, Murilo Borges Silva, Cassiomar Rodrigues Lopes

This work describes the theoretical conception of a computational generic environment to business game creation, aiming to increase the didactic resources to teach using business game. The generic environment is a software that will simulate a business game created by the own course professor, turning easier the discipline planning process and approaching practical and theoretical course content. To insert a game into the generic environment, it is necessary to create two models, a state chart diagram to represent the context sequence involved in the game, and a knowledge base composed by logical rules, similar to an Expert System. These elements permit to analyze and controls the game development, calculating and showing the results of the player actions. This work concludes that from these two elements it is possible to simulate a business game. The work presents an example of game to demonstrate the effectivities of the proposed approach.

CONSTRUÇÃO DE LABORATÓRIOS VIRTUAIS 3D PARA UTILIZAÇÃO EM ENGENHARIA ELETROTÉCNICA

M. T. Valdez, C. M. Ferreira, F. P. Maciel Barbosa

The use of virtual laboratory environments that resemble the reality, through 3D models, has become a common practice in school activities. The integration of new technologies must enable and support the work without affecting the process and the quality of the results. This paper suggests how to use 3D virtual laboratories and at the same time proposes 3D rendering techniques. It is necessary to evaluate the tools and techniques used, due to the high complexity and requirements placed on building 3D virtual environments, where speed is essential. It is a challenge for higher education institutions to train new engineers with the employment of these tools. This paper is a practice proposal related to the design, size and animation, for the development of 3D labs that simulate phenomena related to specific topics of Electrical Engineering, in higher education institutions, in order to increase the skills and knowledge gained in student learning.

DESENVOLVIMENTO DE PROJETO DE UM ELETRODOMÉSTICO EXTRATOR DE CALDO-DE-CANA

Roniere Leite Soares

This paper addresses the nutritional characteristics of cane sugar and conceives an appliance extractor broth-cane called Pure. The concept designed for home use was studied at the working end of the Bachelor of Design in UFPB in 1995, directed by Maria José Gomes da Silva and its emphasis on developing ergonomic aspects, functional, aesthetic and symbolic. The main objective of this publication is to demonstrate how effective is the primacy of ergonomic analysis as a starting point for changing realities where the product the user adequacy ratio is constant need. Similarly, you can see, with this appliance, as the ergonomic method can modify, together with the design, the usual context of the product and everything related to its introduction, before and after.

O ENSINO DE TEORIA DAS FILAS E DA SIMULAÇÃO DISCRETA NOS CURSOS DE ENGENHARIA DE PRODUÇÃO

Ricardo Villarroel Dávalos

The Queueing Theory and the Discrete Event Simulation has great application in Production Engineering Courses and its teaching becomes a challenge to teachers of the area because it involves abstract concepts and complex mathematical procedures. The aim of this article is to evaluate some experiments to support the teaching of these subjects at the Federal University of Santa Catarina - UFSC, based on the use of computational resources. Also, to verify the improvements made in education, will be commented some applications developed by the students.

ENSINO DE PROJETOS DE SISTEMAS DIGITAIS E SINAIS MISTOS COM O SUPORTE DA FERRAMENTA COMPUTACIONAL MS2PSoC

Alexandre Araujo Amaral de Almeida, Alexandre César Rodrigues da Silva

This paper presents a methodology for teaching mixed-signal design with the support of the computational tool MS2PSoC. The methodology consists in deploy in hardware a mixed-signal that was developed and simulated in software. The software used for system simulation is the Matlab/Simulink and the hardware PSoC for the implementation. The MS2PSoC tool is used to translate the system developed in Matlab/Simulink to the PSoC environment. Through this translation, the Simulink mixed-signal system can be implemented in hardware PSoC. To evaluate the methodology, a line code MLT-3 was developed in the Simulink environment and implemented in hardware PSoC trough the MS2PSoC translation. The results have shown that with the MS2PSoC the student can see the implementation of the system that was simulated in Simulink. The MS2PSoC can also be used for teaching hardware description language Verilog, since this is the language used to perform the translation.

HIERARQUIA DE DADOS PARA PIMS CORPORATIVO

Elcio Rodrigues Aranha, Eduardo Batista Teixeira, Eduardo do Carmo, Guilherme Augusto Santiago Tavares, Pedro Henrique Moura Costa, Pedro Luiz Fernandes Aranha, Carolina Burghi Barboza, Alessandra Modolin de Figueiredo, Sérgio Ricardo Lourenço

The Corporate management could be facilitated through the process information management systems, PIMS (Plant Information Management System). Once it has centralized characteristics, that PIMS can simplify the relationship between data from multiple information sources, mixing quality process data with the variables from the industrial controls system. This paper presents a specific technique to centralization of partial information that significantly reduces the Data Base needs (90% less than the traditional tags recording methodologies). Information from four industrial plants was safely integrated from the corporate network through text files in which specific software performs the reading and processing of raw information in to a hierarchical structure. This hierarchical structure makes possible the concatenated data use in an agile way and with no need of new training to the system's users.

ESTUDO DE AUTOMAÇÃO DE GASODUTOS DE PEQUENAS USINAS DE BIOGÁS

Pedro Luiz Fernandes Aranha, Matheus Dias Almeida, Rafael Nossi da Silva, César da Costa, Elcio Rodrigues Aranha

The Biogás, also known as swamp gás, is a renweable resource of energy and naturally formed by anaerobic decomposition of organic matter, this process can be optimized by using special chambers that are called biodigestors. There are many processes that can use this and generate electricity, use as substitute for fossil fuel or even sell as carbon credit. But instead they just burn the gas and discard it. It's low compressibility makes it being transported in gaseous form, unlike LPG, making it harder to occur explosions. This study`s main goal is to create a system of pressure and output control, by changing the rotation of a centrifugal compressor, for small and médium gás pipelines. To reach that goal, and mathematical modeling was elaborated and after that a computer simulation using MATLAB/ SIMULINK.

TECHNICAL SESSION PT3

UMA PROPOSTA DE OBJETO DE APRENDIZAGEM ADAPTATIVO NO ENSINO DA LOGICA BOOLEANA

Olivia Ramos Morais Braga, Ismar Frango Silveira

The aim of this paper is to present the results of the application of an Adaptive Learning Object based on production rules, in a course of Boolean Logic. Human knowledge can be represented by a knowledge base, also called inference rules that are part of the inference engine of the knowledge base. These rules are chaining ideas, resulting in a condition-action, if-then. Each rule is a piece of knowledge, and it can generate a forward or backward reasoning. In the context of this paper, adaptability is obtained by inferring student's learning achievements, categorizing them in three profiles, according to their prior knowledge.

APERFEIÇOAMENTO DO MÉTODO CLAUSE-COLUMN TABLE PARA A GERAÇÃO EFICIENTE DE IMPLICANTES PRIMOS

Caroline Domingues Porto do Nascimento Barbieri, Jean Vitor de Paulo, Alexandre César Rodrigues da Silva

Efficient generation of prime implicants is an important factor in the coverage phase of minterms in boolean functions minimization methods. This paper presents an improved version of the method called Clause-Column Table, used to generate prime implicants, which also facilitates learning in the Boolean function simplification process. The original and improved algorithms were implemented in C language and the results confirmed that the improved version is better at primes implicant's generation. To obtain the minimum solution the coverage problem is formulated as an integer linear programming problem of 0 and 1, in which the objective function and the restrictions are composed by the generated prime implicants.

PROTÓTIPO DE PONTE CONVERSORA COM ACESSO REMOTO PARA ESTUDOS EXPERIMENTAIS EM HVDC

Rodrigo N. de Oliveira, Luís C. O. de Oliveira, Érica V. de Morais, Luiz F. Bovolato

The internet constant evolution has made possible the creation of new tools directed to distance education in various areas of knowledge. Particularly in engineering, new features have been used for education and research experimental support through qualified laboratories with remote access capabilities. These resources have emerged, mainly, in order to solidify the theoretical concepts conveyed by distance education systems with a view to implementing a practical application of the studied topics. As an illustration of this tool, this paper presents the results obtained using learning objects related to the study of a controlled three-phase converter bridge behavior. The experimental platform can be remotely accessed and has great operational flexibility. The user has total control over the supply voltages and the thyristor firing angles, individually, in order to enable a comparative basis between the experimentally harvested results and the theoretical concepts.

APRIMORAMENTO DA CAPACIDADE DE VISUALIZAÇÃO ESPACIAL COM A UTILIZAÇÃO DE HOLOGRAMAS

Vânia Cristina Pires Nogueira Valente, Tamires Trindade Pereira

This articles aims to approach the possibilities of holograms utilizations on three-dimensional that, while explored, allow the improvement of the spatial visualization ability. A hologram is a three-dimensional image recorded by laser that results in an image of three dimensions from the essential use of light.

REPRESENTAÇÃO DE ESTUDANTES DE LICENCIATURA EM CIÊNCIAS BIOLÓGICAS SOBRE AS COMPETÊNCIAS DO PROFISSIONAL PROFESSOR

Wyara A. A. de Medeiros, Maria Delourdes Maciel

This work is based on the concept of skills normally associated with the training and the practice of the teacher. Considering the spectrum of life and professional experience of teachers, they also have their educational activities related to the construction of competence to teach their students, what is expected?. This article is part of a master's thesis in the aim was to answer the following question: what representations of teacher profession and teacher professional skills, have the Bachelor students in Biological Sciences? The aim was to understand the representations of these students about the teacher profession and teacher professional skills in order to contribute to the reflection on the theme, mainly by teacher trainers, given that the skills related content must be included in all training courses teaching professional. To meet these representations we use open questionnaires.

NOÇÃO INTUITIVA DE CONJUNTOS: UM AMBIENTE TECNOLÓGICO DE AJUDA AO ESTUDO NA TRANSIÇÃO ENTRE O ENSINO MÉDIO E O SUPERIOR PARA UM CURSO 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.

SISTEMA PARA CAPTAÇÃO DO MOVIMENTO DO BRAÇO E CONTROLE DE UM PROTÓTIPO DE BRAÇO MECÂNICO À DISTÂNCIA

João A. Marcolan, Joan M. Levandoski, Amauri F. Balotin

This paper describes a system capable of measuring the movement of the human arm and control a prototype that plays such movements through step and servo motors. The signal acquisition system consists of sensors, conditioning circuits, wireless transmission and is powered by batteries. The reproduction system consists of a robotic arm prototype, which is controlled by two stepper motors and a servo motor, mounted in order to reproduce the movements read by the acquisition system. It may be noted that the motion capture system is mobile and can be attached directly to the individual's arm and communicates without data loss up to a distance of 10 meters and the battery had autonomy of 4 hours. At the end of the work it was possible to control the mechanical arm by reading a tri-axial accelerometer and faithfully reproduce the movements of the elbow and the movement of prono-supination of the forearm.

SISTEMA DE SINCRONISMO DE NOREAS FRIGORÍFICAS

Laercio Bacca, Amauri F. Balotin, Joan M. Levandoski

The developed system solve problems of synchronism for maintenance shutdown in Noreas. The system has a speed control and angular synchronization of Noreas, which are failure susceptibles, as the break of sensors or motors and blackout or new firmware downloads, which sometimes result a loss of references, so the downtime for maintenance was extended. This study eliminates these problems through mathematical expressions on the firmware PLC, the PLC controls pre-established references and self-adjusts the angular position regardless of the encoder position. In addition, an HMI system allows the operator to easy interact with many tools and possibilities if the mechanical system will be changed due to routine maintenance.

AVALIAÇÃO DE CUSTOS DE MODELOS HABITACIONAIS EM MADEIRA NO BRASIL

Adão Marques Batista, Rosa de L. C. Escobar, Ingrid Helena Pereira

In this study were evaluated as sponsor, disadvantages and costs of different housing systems with wood in Brazil. A wood as a renewable material offers good thermal comfort and can provide the environment and good architectural aesthetic elegance rarely found in other materials. Is an easy-to-purchase material mostly country. However, there is very caught as many builders and residents still consider the product as second-rate, or low default, is not true. Were evaluated, houses of logs, hardwood, softwood and hardwood frame. The results showed the Wood Frame system is the most economical in Brazil. The costs have shown it is possible to construct with low cost, with good quality and beauty with wood.

TECHNICAL SESSION PT4

SISTEMA PARA ACIONAMENTO DE MOTOR POR APLICATIVO ANDROID

Edson Santos Acco, Jocarly Patrocínio de Souza, João Lucas Mattje Wentz

A mobile device smartphone or tablet has a range of applications in many areas such as finance, entertainment, GPS, internet, photos and videos; concentrating them in the user's hands, leaving their everyday tasks most versatile. This paper presents the development of a prototype for direct current motor drive (DC) and brushless motor type, using a smartphone or tablet with Android operating system. For communication between the PIC microcontroller 16F877A and the smartphone or tablet is used the Bluetooth module HC-06, responsible for activating each motor, used in a small transport vehicle. The DC motor is responsible for the direction and the brushless one is responsible for traction of the vehicle. The creation of the Android application was developed with App Inventor II, an online program developed by Google Inc. and currently managed by Massachusetts Institute of Technology.

APLICAÇÃO DE PÓRTICO DE CARGAS NO APRENDIZADO DE ESTRUTURAS PARA TECNOLOGIA EM CONSTRUÇÃO DE EDIFÍCIOS E TECNOLOGIA EM CONTROLE DE OBRAS

Adão Marques Batista, Carlos Reis Felix Disselli, Gabriela Ferretti Costa

The project for the installation of a frame for testing loads on steel structures in Fatec Tatuapé aims to collaborate with the laboratory development of the Campus; the student's education and the harmonization of the same with the labour market, entrepreneurs and experts from various sectors of the construction industry. On the other hand, the real models testing, demonstrates clearly the behavior of various structural parts, causing the learner to understand quickly the info on structural sizing. In addition, enhances the development of the market, providing trained professionals for improvement of technologies applied to existing construction. In this way, the interaction between education and technology can best be assimilated through actual proposed models and views its consequent improvement. This project benefits an academic community of over 1600 students and the various companies in the sector of construction companies around this core installed in the city of São Paulo.

EMPREENDEDORISMO E INOVAÇÃO NA GRADUAÇÃO TECNOLÓGICA: CONCEPÇÃO E ATUAÇÃO DO NÚCLEO DE ESTUDOS DE TECNOLOGIA E SOCIEDADE (NETS 2008-2014)

Sueli Soares dos Santos Batista, Adão Marques Batista

The Center for the study of technology and society (NETS), in the field of technological colleges Paula Souza Centre, in São Paulo, embraces the task of contributing to the process of training of professionals that the technological graduate has an obligation to promote. The design and structure of the NETS align with the basic assumptions of technological education as presented in CNE/CP Resolution number 32002. According to this regulation, the technology Courses, should encourage the development of entrepreneurial skills and understanding of technological process, in its causes, as well as other skills and competencies. This article presents the research and extension projects that have been designed and executed within this perspective with emphasis on the studies within the line of research entitled entrepreneurship and technological innovation and initiatives for the preparation and implementation of projects aimed at local development startups.

ALGORITMO DE RECONHECIMENTO DE VOZ PARA A INSERÇÃO EM SISTEMAS EMBARCADOS

Thiago Lechner Ribeiro da Silva

The speech recognition technology is been increasingly used in electronic systems and devices, in several applications. This mainly occurs due to advances in technology such as digital signal processing, microprocessors and the appearance of recognition algorithms more and more effective. This paper presents a recognition system of voice commands to drive a DC motor, whose algorithm was developed in MATLAB and tested in SIMULINK environment. The algorithm analyzes the speech signal characteristics compared to the reference signals by cross-correlation between them, to determine which command was performed. The developed system has only two commands: "activate engine" that results in a logic 1 used to drive the motor, and "end" that results in a logic level 0 to turn off the engine, by SIMULINK. Although simple, the system achieved a good set of performance.

AÇÃO INTERDISCIPLINAR EM CURSOS DE GRADUAÇÃO EAD PARA UMA FORMAÇÃO INTEGRAL DOS ESTUDANTES E PARTICIPAÇÃO NO ENADE - EXAME NACIONAL DE DESEMPENHO ESTUDANTIL

Douglas Almendro, Andrea Borelli, Carlos Fernando Araújo Junior, Silvia Augusta de Barros Albert, Vera Maria Jarcovis Fernandes, Adriana Aparecida Furlan, Douglas Tinti, Américo Soares Silva, Silvia Augusta de Barros Albert, Vera Maria Jarcovis Fernandes, Adriana Aparecida Furlan, Douglas Tinti, Américo Soares Silva

This paper presents an interdisciplinary action taken in distance education undergraduate courses at Southern Cross Educational aiming the integral formation of the students and their participation in institutional assessment processes such as ENADE - National Examination of Student Performance. In this action participated different areas of courses, in order to work out a common core of knowledge, covering topics of current affairs and general knowledge required in the institutional evaluation process ENADE. To do it we used the AVA Blackboard as a tool to measure, quantify and analyze the results of proposed questions. The results obtained allowed the identification of lights and shadows in relation to approach these issues in each of the Distance Education Undergraduate Courses and apply strategies for a more complete learning and an integral formation of the student, preparing it for a better academic and professional performance.

NORMAS DE ENGENHARIA E SEGURANÇA DO TRABALHO: PROTEÇÃO DO TRABALHADOR E RESPONSABILIDADE SOCIAL DA EMPRESA

Ana Cláudia Pires Ferreira de Lima, Vanderlei Ferreira de Lima

The Brazilian Constitution requires from the employer the duty to promote the reduction of all the risks that affect employee´s health in the workplace (physical, chemical, biological, psychological etc.). The simple violation of any of the legal or regulatory provisions which establish the employer duties regarding safety, hygiene, occupational health and the work environment, creates the presumption of employer's guilt by the accident occurred, when there is injury with causation. Besides the fulfillment of the engineering and safety standards, for protection and reduction of the risk of accidents, it is necessary to train employees to use the Personal Protective Equipment, as well as require and enforce the use of them, including under penalty of dismissal for serious misconduct of the employee who refuses to do it. Compliance with engineering and safety standards is vital to the health of the employee, as well of the company.

MATRIZ DE DECISÃO DAS TECNOLOGIAS DIGITAIS NA EDUCAÇÃO (TDE): PLANEJANDO UMA AULA TECNOPEDAGÓGICA

Herik Zednik, Silvania Maia, Michel Ángel C. Suárez, Francisco Herbert L. Vasconcelos

The aim of this study is to present a practical application of DTE Matrix (Digital Technology in Education) in planning a lesson with inclusion of digital materials. The matrix works with educators in selecting the most suitable tool for each educational activity through the organization of information about Digital Technologies (DT) available, thus teachers can meet and examine individual tools and determine whether they can actually fit the educational needs, previously planned. The main purpose is to help to compare DT in a quickly way and share their findings with the staff in order to make the pedagogical actions easier. The methodological design of this study is based on a theoretical and practical-descriptive approach. The matrix will help the optimization and improvement of DT in education and to know the factors that must be considered, such as: accessibility, technical and educational requirements, level of knowledge and connectivity.

QUALIFICAÇÃO PROFISSIONAL PARA PROFESSORES DAS ÁREAS TECNOLÓGICAS SEGUNDO O MODELO DA COMPLEXIDADE

Clara Amelia de Oliveira

This paper presents both, a theoretical and practical vision in Education. By one side, it enhances guidelines of "Complex Thought" theory applied to Technological Education. By the other side, it enhances a practical view under the author pedagogic experience at UFSC University, Florianopolis, Brazil. This practice has open new perspectives looking for technological education aggregating some important elements to be included in curriculum development. This proposal points out the importance of integration of the different educational parameters. It considers traditional educational parameters living together with new ones. They, all together, will follow the integration principle applied to pedagogy. Conclusion enhances the Complex Approach perspective is in accordance with the international demands in terms of technological courses development.

USO DE PROGRAMAS DE SIMULACION DE CIRCUITOS PARA EL ESTUDIO DE POTENCIA EN SISTEMAS ELECTRICOS

Fernando N. Bertolotti, Gustavo Hafelfinger, Fabiana Ferreira

This work present some examples of electric circuit simulations to study the electric power delivered to consumers. There are various electric power theories which give definitions about the different power components that an electric load can consume. The reason is because some components must be limited; it is preferable deliver only active electric power ideally with the rest components in zero. To determine the different power components is necessary to measure over the electric load; however, when the electric load model is kneed, these components can be obtained using simulation programs. It will present the examples in detail and will show how electric loads can be classified from the point of view of the electric power delivered. It will analyze the convenience to use these simulation examples in electric circuits and power electronics courses.

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Technology Education for the Future: from simple Growth to Sustainable Quality of Living

TECHNICAL COOPERATION

IEEE

IFEES
INTERNATIONAL FEDERATION OF ENGINEERING EDUCATION SOCIETIES

IGIP
International Society for Engineering Education

SEFI
European Society for Engineering Education

RÉSEAU CARTHAGENE INGÉNIERIE

Asibei
Asociación Iberoamericana de Instituciones de Enseñanza de la Ingeniería

INTERTECH

SHERO
Safety, Health and Environment Research Organization

WCCA
WORLD COUNCIL ON COMMUNICATION AND ARTS

WC SEIT
WORLD COUNCIL ON SYSTEMS ENGINEERING AND INFORMATION TECHNOLOGY

ISTEC
Ibero-American Science & Technology Education Consortium

ASEE
AMERICAN SOCIETY FOR ENGINEERING EDUCATION

SPEED
Student Platform for Engineering Education Development

RBE
Rede Brasileira de Engenharia

ABENGE
Associação Brasileira de Ensino de Engenharia

SPEE

GLOBAL CONGRESS ON MANUFACTURING AND MANAGEMENT

ABENC
associação brasileira de engenheiros civis

Sociedade Brasileira de Automática

AENUI
Asociación de enseñantes universitarios de la Informática

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