

2013 2nd Experiment@ International Conference

(exp.at'13)

**Coimbra, Portugal
18-20 September 2013**



**IEEE Catalog Number: CFP13EXP-POD
ISBN: 978-1-4799-2742-5**

TABLE OF CONTENTS

3D Simulators in Professional Training - Learning Complex Tasks Overcoming Material, Economic, and Human Constraints	6
<i>J. Bernardino Lopes, José Paulo Cravino, Ana Margarida Maia, Leonel Morgado, Paulo Martins, Gonçalo Cruz, Paulo Fernandes, André Pinheiro</i>	
A New Control Method of an Electric Scooter With a Hybrid Ultracapacitor/Battery Energy Storage Topology	11
<i>Sergio Sousa, Victor Antunes, Nelson Andorinha</i>	
A Novel Concept for Configuring Online Laboratories	17
<i>Bogdan-Alexandru Deaky, Tiago Faustino Andrade, Luminita Parv</i>	
A Paschen Curve Experiment for e-Lab.....	21
<i>João Loureiro, Horácio Fernandes, Hans Oosterbeek, Gerard Harkema</i>	
A Remote Virtual Experiment in Mechanical Engineering	26
<i>Tiago Silva, Maria Loja</i>	
Brain Stimulation Using an Haptic Thermal Device	32
<i>Joaquim Gabriel, António Silva, Maria Teresa Restivo, Isabel Pinheiro</i>	
Can STEM Education Take Advantage of Massively Multiplayers Online Competitions?	36
<i>Antonella Longo, Mario Bochicchio, Antonio Bernardo</i>	
Collaborative Environment for Geometry.....	42
<i>Vanda Santos, Pedro Quaresma</i>	
Easy Development of Web Based Simulations	47
<i>Katarina Zakova</i>	
Educational Model Based on Virtual Reality: Simulation of the Construction of a Bridge Deck.....	52
<i>Alcínia Zita Sampaio, Luis Viana</i>	
Gantry Crane Control: A Simulation Case Study	58
<i>Paulo Moura Oliveira, José Boaventura Cunha</i>	
Global Navigation Satellite Systems (GNSS) Remote Laboratory at BMSTU	64
<i>Igor Vlasov, Jakov Mikolnikov, Dmitry Semenov, Igor Titov</i>	
Inductive Principles in Engineering Pedagogy on the Example of Remote Labs	68
<i>Raivo Sell, Tiia Rüütmann, Sven Seiler</i>	
Java-Based Simulator of Dynamical Systems and PID Control	72
<i>Luis Brito Palma, João Costa Cruz, Fernando Vieira Coito, Paulo Sousa Gil</i>	
Peer Assisted Instruction and VLE in Enquiry Based Learning in Chemical Engineering	78
<i>Jarka Glassey</i>	
Peers' Evaluation of a Reconfigurable IEEE 1451.0-Compliant and FPGA-Based Weblab.....	83
<i>Ricardo Jorge Costa, Gustavo Ribeiro Alves, Mário Zenha-Rela, Danilo Garbi Zutin, Johan Zackrisson, Willian Rochadel, Unai Hernández-Jayo</i>	
Remote Electronics Lab Within a MOOC: Design and Preliminary Results	89
<i>Gabriel Diaz, Felix García Loro, Manuel Castro, Mohamed Tawfik, Elio Sanristobal, Santiago Montes</i>	
Remote Laser Laboratory at BMSTU: Browser-Based Solution	94
<i>Alexander Glotov, Dmitry Bondarenko, Ivan Lobko, Alexey Vorobiev, Marina Kostina, Igor Titov</i>	
Remote Physiological Data Acquisition: From the Human Body to Electromechanical Simulators.....	99
<i>Carla Barros, Celina P. Leão, Filomena Soares, Graça Minas, Catarina Meireles, Diogo Lemos, José Machado</i>	
Repository-Based Learning and Training in Ophthalmology.....	105
<i>José Carlos Teixeira, João Costa, Patrícia Alecrim, Vera Cardoso, Luis Caridade</i>	
Robotics Virtual Lab Based on Off-Line Robot Programming Software	109
<i>Paulo Abreu, Manuel Romano Barbosa, António Mendes Lopes</i>	
Simulation Software Applied to Short Term Cardiovascular Disease Risk Assessment	114
<i>Simão Paredes, Teresa Rocha, Paulo Carvalho, Jorge Henriques, João Morais</i>	
The Remote Plasma Nanotechnologies Laboratory for Experimental Research and Practical Training	118
<i>Alexander M. Zimin, Andrey V. Shumov, Semen E. Krivitskiy, Vladislav I. Troynov</i>	
Trend Prediction Methodology Based on Time Series Similarity Analysis and Haar Wavelet Decomposition.....	122
<i>Teresa Rocha, Simão Paredes, Paulo de Carvalho, Jorge Henriques</i>	
Using Interactive Video for On-Line Blended Learning in Engineering Education	128
<i>Clement Onime, James Uhomoibhi</i>	
Using ISA Services to Manage Lab Sessions With Embedded Lab Servers	133
<i>Danilo Zutin, Tiago Faustino Andrade, Maria Teresa Restivo, Manuel Rodrigues Quintas</i>	

Using Video Tools to Teach Nanoparticles Characterization Contents for a Distance Learning Course	138
<i>Maria da Graça Rasteiro, Alberto Cardoso, Rita Gomes, Tiago Santos</i>	
World Pendulum @ e-Lab	143
<i>Rui Figueiredo, Tiago Pereira, Samuel Balula, Rui Neto, Horácio Fernandes, Gesil Amarante-Segundo, Isabel Borges</i>	
1 DOF Haptic Device Built With Parts of Recycled Material	152
<i>Pedro Ubaldo Gomes, Manuel Rodrigues Quintas, Maria Teresa Restivo</i>	
A New Chemistry e-Lab Experiment: Chemical Equilibrium Reaction	154
<i>Sérgio C. Leal, João P. Leal</i>	
A Prototype for a Mobile-Based System of Skin Lesion Analysis Using Supervised Classification.....	156
<i>Luís Rosado, Márcia Ferreira</i>	
An Immersive System for the Training of Tower Crane Operators.....	158
<i>Bruno Patrão, Paulo Menezes</i>	
An Interactive Video to Demonstrate How to Characterize Nanoparticles	160
<i>Maria da Graça Rasteiro, Alberto Cardoso, Rita Gomes, Tiago Santos</i>	
Assisted Living: Home Physiotherapy Demo.....	162
<i>João Couto Soares, ÁGata Vieira, Joaquim Gabriel</i>	
Augmented Chemical Reactions: An Augmented Reality Tool to Support Chemistry Teaching	164
<i>Patrick Maier, Gudrun Klinker</i>	
Demo: Multi-User Virtual World Simulator of F-16 Aircraft Engine Mechanical Maintenance	166
<i>Paulo Fernandes, André Pinheiro, Gonçalo Cruz, Ana Maia, Leonel Morgado, Paulo Martins, Hugo Paredes, Benjamin Fonseca, J. Bernardino Lopes, José Cravino</i>	
Elétrica On-Line	168
<i>Ana Maria Beltran Pavani, Guilherme Penello Temporão</i>	
HapticBender System. Study of Young Modulus.....	170
<i>Linda Padilla, Maria Teresa Restivo, Antonio Mendes Lopes</i>	
Haptic Device Demo Using Temperature Feedback	172
<i>António Silva, Joaquim Gabriel, Maria Teresa Restivo</i>	
Integration of a Remote Lab in a Software Tool for Digital Electronics.....	174
<i>Javier García-Zubía, Ignacio Angulo, Luis Rodriguez-Gil, Pablo Orduña, Olga Dziabenko, María Guenaga</i>	
Interactive Demonstration of a Java-Based Simulator of Dynamical Systems.....	176
<i>Luis Brito Palma, João Costa Cruz, Fernando Vieira Coito, Paulo Sousa Gil</i>	
Interactive Demonstration of InerTouchHand - iTH, A Glove Device With Distributed Inertial Sensors and Vibro-Tactile Feedback.....	178
<i>Jorge Lobo, Pedro Trindade</i>	
Labicom.net - Putting Your Laboratory Online in Less Than Five Minutes With WebPager Tool.....	180
<i>Igor Titov, Evgeny Titov</i>	
Learning Physics with Virtual Simulations	184
<i>Luciano Santos, Carlos Vaz de Carvalho</i>	
Madeira Wine Online Quality Control	186
<i>Catarina Novo, Lúcia Bilro, Paulo Antunes, Nélia Alberto, Vanda Pereira, Mon-Chu Chen, José C. Marques, João L. Pinto</i>	
Matlab Tool Applied to the Trend Prediction of Physiological Time Series.....	188
<i>Teresa Rocha, Simão Paredes, Paulo de Carvalho, Jorge Henriques</i>	
Matlab Tool for Cardiovascular Disease Risk Prediction	190
<i>Simão Paredes, Teresa Rocha, Paulo Carvalho, Jorge Henriques, João Morais</i>	
Online Virtual System for Straightness Evaluation	192
<i>Maria Teresa Restivo, José Rodrigues, Fátima Chouzal, Paulo Menezes</i>	
Real-Time Augmented Reality Shopping Platform for Studying Consumer Cognitive Experiences	194
<i>Jasmina Stoyanova, Ricardo Gonçalves, António Coelho, Pedro Brito</i>	
Real-Time Epileptic Seizure Prediction at Centro Hospitalar e Universitário de Coimbra	196
<i>César Teixeira, Bruno Direito, Mojtaba Bandarabadi, Hans Grebe, Francisca Sá, Francisco Sales, António Dourado</i>	
Remote Demo for Encoders' Tutorial	199
<i>Tiago Faustino Andrade, Manuel Rodrigues Quintas, Maria Teresa Restivo</i>	
Remote Laboratory Environment for Embedded System Experiments	201
<i>Raivo Sell</i>	
SEEPTOOL - A Remote Demo for Small Scale Seepage Problems.....	203
<i>José Marques</i>	
The Visual Statistical Calculator - An Interactive and Visual Tool	205
<i>Liliane Machado, Ronei Moraes, Elaine Soares</i>	
Thermal Residual Stresses in Functionally Graded Structures: A Didactic Case Study.....	207
<i>Tiago Silva, Maria Loja</i>	

Using Remote Experimentation for Study on Engineering Concepts Through a Didactic Press.....	209
<i>Lucas Boeira Michels, Vilson Gruber, Lirio Schaeffer, Roderval Marcelino, Juarez Bento da Silva, Sarah de Resende Guerra</i>	
World Wide Remote Distributed Experiment on e-Lab.....	212
<i>Rui Neto, Horácio Fernandes, Tiago Pereira, Isabel Borges, Gesil Amarante-Segundo, Samuel Balula, Rui Figueiredo, José Pereira</i>	
Author Index	