PROCEEDINGS OF
THE 2012 INTERNATIONAL CONFERENCE ON
FRONTIERS IN EDUCATION: COMPUTER SCIENCE &
COMPUTER ENGINEERING

FECS 2012

Volume II

Editors

Hamid R. Arabnia
Victor A. Clincy, Leonidas Deligiannidis

Associate Editors

Azita Bahrami, Ashu M. G. Solo

WORLDCOMP'12
July 16-19, 2012
Las Vegas Nevada, USA
www.world-academy-of-science.org

©CSREA Press

This set of volumes contain papers presented at The 2012 International Conference on Frontiers in Education: Computer Science & Computer Engineering (FECS'12). Their inclusion in this publication does not necessarily constitute endorsements by editors or by the publisher.

Copyright and Reprint Permission

Copying without a fee is permitted provided that the copies are not made or distributed for direct commercial advantage, and credit to source is given. Abstracting is permitted with credit to the source. Please contact the publisher for other copying, reprint, or republication permission.

Copyright © 2012 CSREA Press
ISBN: 1-60132-212-7, 1-60132-213-5 (1-60132-214-3)
Printed in the United States of America

CSREA Press
U. S. A.

Foreword

It gives us great pleasure to introduce this collection of papers to be presented at the 2012 International Conference on “Frontiers in Education: Computer Science and Computer Engineering” (FECS'12), July 16 through 19, 2012, at Monte Carlo Resort, Las Vegas, USA.

The Academic Co-Sponsors, Corporate Co-Sponsors, Co-Sponsors At-Large and Organizers of this year's conference include (separated by semicolons):
Bioinformatics & Computational Biology Program, George Mason University, Virginia, USA; Biomedical Cybernetics Laboratory, HST of Harvard University and MIT, USA; Minnesota Supercomputing Institute, University of Minnesota, USA; Center for Cyber Defense, NCAT, USA; Argonne's Leadership Computing Facility of Argonne National Laboratory, Illinois, USA; The Center for Advanced Studies in Identity Sciences (CASIS: NC A&T, Carnegie Mellon, Clemson, UNC Wilmington), USA; Knowledge Management & Intelligent System Center (KMIS) of University of Siegen, Germany; Intelligent Cyberspace Engineering Lab., ICEL, Texas A&M University, Commerce, Texas, USA;UMIT, Institute of Bioinformatics and Translational Research, Austria; Hawkeye Radiology Informatics, Department of Radiology, College of Medicine, University of Iowa, Iowa, USA;The International Council on Medical and Care Compunetics, Europe; US Chapter of World Academy of Science (http://www.world-academy-of-science.org/); Supercomputer Software Department (SSD), Institute of Computational Mathematics & Mathematical Geophysics, Russian Academy of Sciences, Russia; International Society of Intelligent Biological Medicine, USA; NDSU-CIIT Green Computing and Communications Laboratory, USA; Medical Image HPC & Informatics Lab (MiHi Lab), University of Iowa, Iowa, USA; High Performance Computing for Nanotechnology, USA; Manx Telecom, Europe; Computer Science Research, Education, and Applications Press; World Academy of Biomedical Sciences and Technologies; HoIP Telecom, Europe; Super Micro Computer, Inc., San Jose, California, USA; Intel Corporation; Hodges Health, UK; and OMG ™ . In addition, a number of university faculty members and their staff (names appear below and also on the cover of the proceedings), several publishers of computer science and computer engineering books and journals, chapters and/or task forces of computer science associations/organizations from 6 countries, and developers of high-performance machines and systems provided significant help in organizing the conference as well as providing some resources.

An important mission of WORLDCOMP (a federated congress to which this conference is affiliated with) includes "Providing a unique platform for a diverse community of constituents composed of scholars, researchers, developers, educators, and practitioners. The Congress makes concerted effort to reach out to participants affiliated with diverse entities (such as: universities, institutions, corporations, government agencies, and research centers/labs) from all over the world. The congress also attempts to connect participants from institutions that have **teaching** as their main mission with those who are affiliated with institutions that have **research** as their main mission. The congress uses a quota system to achieve its institution and geography diversity objectives."

The program committee would like to thank all those who submitted papers for consideration. About 60% of the submissions were from outside the United States. Each paper was peer-reviewed by two experts in the field for originality, significance, clarity, impact, and soundness. In cases of contradictory recommendations, a member of the conference program committee was charged to make the final decision; often, this involved seeking help from additional referees by using a double-blinded review process. In addition, papers whose authors included a member of the conference program committee were evaluated using the double-blinded review process. The only exception to the above evaluation process was for papers that were submitted directly to chairs/organizers of approved sessions/workshops; in these cases, the chairs/organizers were responsible for the evaluation of such submissions. The overall paper acceptance rate for regular papers was 29%; 19% of the remaining papers were accepted as poster papers (at the time of this writing, we had not yet received the acceptance rate for a few individual tracks.)

We are very grateful to the many colleagues who helped in organizing the conference. In particular, we would like to thank the members of the FECS’12 Program Committee who we hope will offer their help

again in organizing the next year's conference (FECS'13). The FECS'12 Program Committee members were:

- *Dr. Selim Aissi (WC Steering Committee), Senior Business Leader & Chief Architect, Visa Corporation, USA (formerly: Chief Strategist - Security, Intel Corporation, USA)*
- *Prof. Babak Akhgar (WC Steering Committee), PhD, FBCS, CITP, Professor of Informatics, Sheffield Hallam University, Sheffield, UK*
- *Prof. Naji Masned Irshyd AlQbailat, Assistant Dean for Planning, Developing and Quality, Princess Alia University College, Al-Balqa' Applied University, Shmeisani, Amman, Jordan*
- *Prof. Hamid R. Arabnia (WC General Chair & Coordinator), Elected Fellow, ISIBM; Editor-in-Chief, The Journal of Supercomputing (Springer); Member, Advisory Board, IEEE TC on Scalable Computing; University of Georgia, Georgia, USA*
- *Prof. Baharuddin Aris, Professor and Director, Universiti Teknologi Malaysia, Johor Bahru, Malaysia*
- *Dr. Ezendu Ariwa (WC Publicity Co-Chair), Chartered Fellow of The British Computer Society; Fellow of Institute of Information Technology Training: Fellow of Higher Education Academy; Chair, IEEE Consumer Electronics Chapter and IEEE Broadcast Technology Chapter (UK&RI); Associate Prof./Senior Lecturer, Strategic Information Systems, London Metropolitan University, London, UK*
- *Dr. Azita Bahrami, formerly at Armstrong Atlantic State University, Savannah, Georgia, USA*
- *Dr. Waqas Haider Khan Bangyal, Iqra University Islamabad, Pakistan*
- *Prof. H-P. Bischof, Rochester Institute of Technology, Rochester, New York, USA*
- *Prof. Juan-Vicente Capella-Hernandez, Universitat Politecnica de Valencia, Valencia, Spain; Executive Manager, Wireless Sensor Networks Valencia, Spain*
- *Prof. Victor Clincy, Computer Science Department, College of Science and Mathematics, Kennesaw State University, Kennesaw, Georgia, USA*
- *Prof. Kevin Daimi (WC Steering Committee), Director, Computer Science and Software Engineering Programs, Department of Mathematics, Computer Science and Software Engineering, University of Detroit Mercy, Detroit, Michigan, USA*
- *Prof. Leonidas Deligiannidis, Wentworth Institute of Technology, Boston, Massachusetts, USA*
- *Dr. Lamia Djoudi, University of Versailles, France*
- *Prof. Gerry Vernon Dozier (WC Steering Committee), Chair, Department of Computer Science; Director, Center for Advanced Studies in Identity Sciences; Center for Cyber Defense; North Carolina A&T State University, North Carolina, USA*
- *Prof. Madjid Fathi (WC Steering Committee), Director, Knowledge Management and Intelligent Systems Center, University of Siegen, Germany*
- *Dr. Bilal Gonen, University of Alaska, Anchorage, Alaska, USA*
- *Prof. George A. Gravvanis, Democritus University of Thrace, Greece*
- *Prof. Michael R. Grimaila (WC Steering Committee), Air Force Institute of Technology, Systems Engineering; Fellow of ISSA; CISM, CISSP, IAM/IEM; Editorial Board of ISSA Journal; Air Force Center of Cyberspace Research; Advisor to the Prince of Wales Fellows & Prince Edward Fellows at MIT and Harvard Universities; PC member, NATO Cooperative Cyber Defence Centre of Excellence (CCD COE) & Int'l Conf. on Information Warfare and Security*
- *Dr. Shaikh Abdul Hannan, Department of Computer Science, Vivekanand College, Aurangabad, India*
- *Prof. Houcine Hassan, Universitat Politecnica de Valencia, Spain*
- *Dr. Shahram Javadi, Electrical Engineering Department, Azad University, Central Tehran Branch, Tehran, Iran; Director in Chief, International Journal of Smart Electrical Engineering*
- *Prof. D. V. Kodavade, Head, Computer Science & Engineering Department, D.K.T.E Society's Textile & Engineering Institute, Maharashtra State, India*
- *Dr. Praveen Koduru, Electrical & Computer Engineering, Kansas State University, USA*
- *Dr. B. V. Durga Kumar, Taylors University, Malaysia*
- *Dr. A. V. Senthil Kumar, Director, Department of MCA, Hindusthan College of Arts and Science, Hindusthan Gardens, India*
- *Prof. Kun Chang Lee (WC Steering Committee), Professor of MIS and WCU Professor of Creativity Science, Business School and Department of Interaction Science, Sungkyunkwan University, Seoul, South Korea*
- *Prof., Dr., Dr.h. Victor Malyshkin (WC Steering Committee), Head, Supercomputer Software Department (SSD), Institute of Computational Mathematics and Mathematical Geophysics, Russian Academy of Sciences, Russia*
- *Prof. George Markowsky (WC Steering Committee), Associate Director, School of Computing and Information Science; Chair International Advisory Board of IEEE IDAACS; Director 2013 Northeast Collegiate Cyber Defense Competition; Chair Bangor Foreign Policy Forum; Cooperating Professor*

Mathematics and Statistics Department UMaine; Cooperating Professor School of Policy & International Affairs UMaine; University of Maine, Orono, Maine, USA

- *Prof. Andy Marsh (WC Steering Committee), Director HoIP; Director HoIP Telecom, UK; Secretary-General WABT; Vice-president ICET; Visiting Professor University of Westminster, UK*
- *Farhad Mehran, Saman Sanat Jahan Gostar Co., Tehran, Iran*
- *Dr. Sara Moein, Editorial board, International Journal of Science and Technology, Faculty of Engineering, MultiMedia University, Malaysia*
- *Dr. Ali Mostafaeipour, Industrial Engineering Department, Yazd University, Yazd, Iran*
- *Dr. Mohammad Hossein Nadimi-Shahraki, Head, Research Department, Artificial Intelligence, Faculty of Computer Engineering, Najafabad branch, Islamic Azad University, Iran*
- *Prof. Max M. North, Professor of Management Information Systems; Pioneer of Virtual Reality Therapy; Director of Visualization & Simulation Research Center; School of Engineering Technology & Management; Southern Polytechnic State University; Marietta, Georgia, USA*
- *Dr. Sarah M. North, Distance Learning Coordinator, Kennesaw State University, Kennesaw, Georgia, USA*
- *Prof. James J. (Jong Hyuk) Park (WC Steering Committee), Department of Computer Science and Engineering, Seoul National University of Science and Technology (SeoulTech), Korea; President, KITCS; President, FTRA; Editor-in-Chiefs: HCIS, JoC and IJITCC Journals*
- *Prof. Yongyuth Permpoontanalarp, Logic and Security Lab, Department of Computer Engineering, King Mongkut's University of Technology Thonburi, Bangkok, Thailand*
- *Dr. Kadiyala Ramana, Annamacharya Institute of Technology and Sciences, Andhra Pradesh, India*
- *Dr. Hassan Reza (WC Steering Committee), UND Aerospace, University of North Dakota, Department of Computer Science, Grand Forks, North Dakota, USA*
- *Dr. Yong Shi, Kennesaw State University, Georgia, USA*
- *Dr. Akash Kumar Singh, IT Architect, IBM, Sacramento, California, USA*
- *Ashu M. G. Solo (WC Publicity Chair), Fellow of British Computer Society, Principal/R&D Engineer, Maverick Technologies America Inc.*
- *Dr. Jacek Stando, Technical University of Lodz, Lodz, Poland*
- *Prof. Sang C. Suh (WC Steering Committee), Head and Professor, Department of Computer Science; Vice President, Society for Design and Process Science (SDPS); Director, Intelligent Cyberspace Engineering Lab (ICEL); Texas A&M University, Commerce, Texas, USA*
- *Dr. Sim Kok Swee, Faculty of Engineering and Technology, Jalan Ayer Keroh Lama, Melaka, Malaysia*
- *Prof. Ousmane Thiare, Department of Computer Science, Gaston Berger University, Senegal*
- *Prof. Keshav D. Verma, Chairman, Department at S.V. (P.G.) College, Aligarh, India; Founder and Director, MS Research Laboratory (MSRL), India; Editor-in-Chief: IJNMC Journal + IJBRE Journal + MSRJ Journal*
- *Prof. Layne T. Watson (WC Steering Committee), IEEE Fellow; NIA Fellow; ISIBM Fellow; Fellow of The National Institute of Aerospace; Virginia Polytechnic Institute & State University, Virginia, USA*
- *Dr. Wei Wei, Xi'an University of Technology, Xi'an, P. R. China*
- *Prof. Jeff Zadeh, Collegiate Professor and Program Chair, University of Maryland, University College Europe, Germany; University of Maryland, USA*

We express our gratitude to keynote, invited, and individual conference/tracks and tutorial speakers - the list of speakers appears on the conference web site. We would also like to thank the followings: UCMSS (Universal Conference Management Systems & Support, California, USA) for managing all aspects of the conference; Dr. Tim Field of APC for managing the printing of the proceedings; and the staff of Monte Carlo Resort in Las Vegas for the professional service they provided. Last but not least, we would like to thank the Co-Editors and Associate Co-Editors of FECS'12: Prof. Hamid R. Arabnia, Prof. Victor A. Clincy, Prof. Leonidas Deligiannidis, Dr. Azita Bahrami, and Ashu M. G. Solo.

We present the proceedings of FECS'12.

Steering Committee, FECS 2012
http://www.world-academy-of-science.org/worldcomp12/ws

Contents

SESSION: DEGREE PROGRAMS, CURRICULUM, AND COURSE DEVELOPMENT + ASSESSMENT AND RELATED ISSUES

Curriculum Design, Development and Assessment for Computer Science and Similar Disciplines **3**
Igor Schagaev, Elisabeth Bacon, Nebojsa Folic, Nicholas Ioannides

Adaptive Curriculum in Computer Literacy Course **15**
Nasser Tadayon, Nathan Barker, Connie Nyman

A Minor in Game Development **22**
Serhiy Morozov, Kevin Daimi, Yali Wu

Network Security Course: A Demonstration of Project-Based Learning **28**
Leonidas Deligiannidis, Charlie Wiseman, Mira Yun, Tom Goulding

ProNIFA: A Tool Supporting Semi-Automatized Formative Assessment in STEM Teaching **35**
Michael D. Kickmeier-Rust, Dietrich Albert

An Industry Focus Group Forum for the Assessment of New Engineering Graduates **41**
Ken Ferens

A Minor in Health Informatics **48**
Yali Wu, Kevin Daimi, Serhiy Morozov

Communication Analysis Through PBL **54**
Norimichi Hiroshige, Weiqiang Kong, Shigeru Kusakabe, Tsunenori Mine, Naoyasu Ubayashi, Akira Fukuda, Keijiro Araki

Developing Robot Programming Lab Projects **59**
Xuejun Liang

A Methodology for the Assessment of Pedagogic and Implementation Aspects of Laboratories **66**
Muhammad Rashid, Imran Ali Tasadduq, Yousuf Irfan Zia, Mohammad Al-Turkistany, Saima Rashid

A 'Techy' Minor in Web Design and Development for Non-Technical Students **73**
Ronald Vullo, Catherine Beaton

Teaching Mathematics and Programming Foundations Early in Curriculum Using Real-Life Multicultural Examples **78**
Milica Barjaktarovic

Development of Bioinformatics Foundational Courses in Undergraduate Curricula **85**
Muhammad Ali

A Curriculum Coordination Project for Computer Science Transfer **91**
Xiaohong Wang

A Curriculum Development for the Undergraduate Degree Program in Information Technology **97**
Yingbing Yu

Modernizing the Real-Time and Embedded Curriculum **101**
Kelvin Nilsen

Teaching Design and Testing in Computer Science Curriculum **106**
Milica Barjaktarovic

Using Real Execution Timings to Enliven a Data Structures Course **113**
Bob Boothe

Developing and Teaching a Biometrics Course as Part of Computer Science and Engineering Curriculum **118**
Weidong Liao, Osman Guzide, Reza Mirdamadi

Botzone: A Game Playing System for Artificial Intelligence Education **122**
Haifeng Zhang, Ge Gao, Wenxin Li, Cheng Zhong, Wenyuan Yu, Cheng Wang

Accrediting Online Programs in Computing Disciplines **127**
Rob Byrd

Successful ABET Accreditation at King Faisal University - Rubric based Assessment Plan for Continuous Improvement **133**
Khalid Buragga, Muhammad Asif Khan

Data Representation in Digital Design, a Single Conversion Equation and a Formal Languages Approach **138**
Hassan Farhat

Terminal Efficiency Analysis of a Postgraduate Degree, Under the Theory of Hierarchical Distances Geometric Structure **143**
Francisco Casanova-del-Angel, Maria Elena Rosas-Sanchez

Discrete Mathematics as A Transitional Course **148**
Chung-Chih Li, Kishan Mehrotra, Chu Jong

Comparison of Elite and Regional School Computer Science Education and the Impact on Students' Ability **152**
Shuhua Ren, Jie Liu, David Olson

The Need for the Development of Graduate Schools of Telecommunications **156**
Mark Cummings, Victor Clincy, Victor Marshall

Industry Towards Embedded Curriculum Development **164**
Pin Tao, Shiqiang Yang, Ninghan Zheng, Yongqiang Chen

SESSION: TOOLS AND SYSTEMS + WEB USAGE METHODS + LEARNING ENVIRONMENTS + ETHICS AND RELATED ISSUES

AnalyzeD: A Shared Tool for Analyzing Virtual Team Collaboration in Classroom Software Engineering Projects **169**
Thomas Kowark, Hasso Plattner

wProjects: Dynamic Web Development Projects for Female High School Students **176**
Elizabeth Thiry, Mary Beth Rosson

Facilitating Peer Review in an Online Collaborative Learning Environment for Computer Science Students **183**
Cen Li, Zhijiang Dong, Roland Untch, Michael Chasteen

Strategies for Teaching Ideation and Ethics in Computer Science **190**
Kendall Nygard, Lisa Bender, Gursimran Walia, Kevin Brooks, Krishna Kambhampaty, Travis Nygard

Individual Student Capstone Projects Focused on Community Engagement / Service Learning **197**
Donald Schwartz, Andrew Habers, Oliver Galicki, James Carter

A Semantic Web Framework for Teaching Logic Circuits **204**
Francisco-Edgar Castillo-Barrera, Carolina Medina-Ramirez, Jose-Emilio Labra-Gayo, S. Masoud Sadjadi

Experiential Learning: Applying Software Engineering Principles and Mobile Programming in Undergraduate Capstone Projects **211**
Carlos Otero, Dru Luce-Edward, Jeremy Smith, Steve Clark, Mattew Whitt, Brandon Hines, Abrar Qureshi

A Peer-supported Integrated Model to Promote High School Girls Learning Programming **217**
Yi Fen Chen, Cheng-Chih Wu

Learning the Concepts of Classes and Objects in a Game **223**
Jinghua Zhang, Elvira Caldwell, Mustafa Atay, Elva Jones

Collaborative Learning Framework: A Case Study of an Undergraduate Database Course **229**
M.Dolores Vargas-Cerdan, J.Rafael Rojano-Caceres, Fernando Ramos-Quintana

Learning Style and Students Perception of Satisfaction on Web-based Learning Environment at Arabian Gulf University- Kingdom of Bahrain **235**
Jefferson Sanidad, Bernard Sanidad, Sheryl Sanidad

URI Online Judge: a New Classroom Tool for Interactive Learning **242**
Neilor A. Tonin, Jean Luca Bez

Supporting Active Learning in Large Classrooms using Pen-enabled Computers **247**
Sam Kamin, Wade Fagen

Ethical Concerns in the Virtual World **252**
Suhair H. Amer

International Student Attitudes Concerning Academic Dishonesty Situations **256**
James Frost, Alan Hamlin

Ethical Perceptions of College Students on Emerging and Converging Technologies **262**
Suhair H. Amer

Data Warehouse Implementation of Examination Databases **265**
Majid Zaman, S.M.K. Quadri, Muheet Ahmed Butt

New Active Learning Tools **269**
Marcella Coccanari, Rocco Lanata

Teaching Ethics Across Disciplines **272**
Suhair H. Amer

SESSION: SOFTWARE ENGINEERING AND SYSTEM DEVELOPMENT + PROGRAMMING/LANGUAGE ISSUES

Characterization of CS1 Student Programming **277**
Nigel Bosch, Dwayne Towell, John Homer

IPLP: A Method of Delivery Programming Techniques by Making Analogy **284**
Hari Mohan Pandey, Andrew Turner

Internal Conferences as a Constructivism Based Learning Arrangement for Research Master Students in Software Engineering **292**
Juergen Mottok, Irmgard Schroll-Decker, Michael Niemetz, Georg Scharfenberg, Georg Hagel

A Process for Collecting and Analyzing Chronological Data for CS1 Programming Assignments **300**
Raymond Pettit, Ryan Clements, Susan Mengel

A Study of Misconceptions and Missing Conceptions of Novice Java Programmers **307**
Chiu-Liang Chen, Shun-Yin Cheng, Janet Mei-Chuen Lin

A Fast and Effective Design and Implementation of Online Programming Drills **314**
Zhuhan Jiang, Jiansheng Huang

A Hybrid Structured Methodology for Developing Computer-based Industrial Computer Systems **321**
Jose Albaladejo, Carlos Dominguez, Luis Escolar, Angel Perles, Juan-Miguel Martinez, Houcine Hassan, Juan-Vicente Capella

Testing Students' Knowledge of C Language Using Bonus Questions **328**
Mark Korenblit

A C Language Compiler Design in Comprehensive Experiment Methodology for Computer Science and Technology **334**
Tian Wang, Yongtao Hao

SESSION: TEACHING METHODS AND ENVIRONMENTS, TEAM TEACHING, OUTREACH METHODS AND DIVERSITY CHALLENGES

Teaching Computational Science and Simulations Using Interactive Depth-of-Field Technologies **339**
Mitchell G. B. Johnson, Ken A. Hawick

RoboSoccer Project: Teaching Complex Concepts Through Undergraduate Research **346**
Andrzej Bieszczad

Research and Teaching with Remo: Student Research Projects and Teaching for and by Undergraduate Students **353**
Dagmar Monett, Mario Sanger

Task-Specific Strategies in Teaching Programming I for First Year Undergraduate Students **360**
Xiaoyuan Suo, Kun Shao

Alternative Teaching Methodologies of Transformations in Computer Graphics **366**
Hassan Farhat

Team-Teaching Scratch Programming and Voice Acting Art in Elementary School Classrooms **371**
Ying-Fang Lin, Janet Mei-Chuen Lin, Jin-Cheng Kang

Teaching with the Emerging GENI Network **378**
James Griffioen, Zongming Fei, Hussamuddin Nasir, Xiongqi Wu, Jeremy Reed, Charles Carpenter

The Partnership for Early Engagement in Computer Science (PEECS) Program: Teaching African-American Middle-School Students Computer Science **385**
A. Nicki Washington, Legand Burge, III, Marlon Mejias, Ketly Jean-Pierre

Creativity, Modeling and Empathy: An Out-of-the-Box Methodology for Teaching Digital Design **391**
John Hadjilogiou, Samuel Kozaitis, Bartel van der Veek, Ashwin Acharya, Kenneth Shafer, Robert Sheffield

Using Scaffolded Activities to Teach Computational Thinking to Middle School Girls **398**
Heidi Webb, Mary Beth Rosson

A Cross-Platform Framework for Educational Application Development on Phones, Tablets, and Tablet PCs **405**
Wade Fagen, Sam Kamin

A Gender-Inclusive Holistic Approach for IAS Education **411**
Myung Ah Park, Gang Qian, Michelle Hepner, Kewei Sha

Impact of Virtualization Technology in the IT Classroom **418**
Shahriar Movafaghi, Sharareh Hojjati, Hassan Pournaghshband, Tom Chan, J. Stephanie Collins

Teaching Writing in Computer Science **425**
Anastasia Tircuit

Teaching Finite Elements to Structural Engineers **432**
Mladen Mestrovic

Computer-Added Extraction of Chinese New Vocabulary for Language Teaching **436**
Yuen-Hsien Tseng, Zih-Ping Ho

University Social Space for Consulting and Development of Reliable Educational Multimedia Content **441**
Agustin Leon Barranco, Jose Martin Mejia Estrada

Development of Use of a Virtual Construction Company Simulation System for Education **448**
Thomas Korman, Hal Johnston

Toward Exhaustive Teaching of Relational Database Indexes **454**
Massimo Macera, Paolo Rocchi

Improving Efficiency in Interactive Educational Software **459**
Jesse Keogh, Medha Sarkar, James William, Michael Fletcher

A Comprehensive Experiment Scheme for Computer Science and Technology **464**
Lisheng Wang, Renzhi Huang

Effectiveness of Peer Tutoring: Computer Science Students' Perspective **467**
Ling-Chian Chang, Cheng-Chia Yang, Mei-Tzu Chiang, Greg Lee

Remote Hardware Experiment Teaching **471**
Chan Yong-qiang, Quan Cheng-bin

SESSION: CASE STUDIES, PROJECTS, RETENTION METHODS, AND NOVEL EDUCATIONAL ENVIRONMENTS

Building a Secure Virtual Lab Infrastructure for IT Education **481**
Reginald Sands, George Hsieh, Wallace Hendricks, Aurelia Williams

The Software Productization Center at Millersville University: A Study in Successful Cross-Disciplinary Collaboration at the Undergraduate Level **488**
Stephanie Elzer, Nancy Mata, Patrick McCaskey, Stacey Irwin

INSIGHT: Infusing System Design and Sensor Technology in K-12 Education **495**
Mitchell L. Neilsen, Nathan Bean, Gurdip Singh, Jacqueline Spears, Virgil Wallentine, Naiqian Zhang

40 Years of Processor Design in One Semester **502**
Gerald Dueck

Virtualization for a Cyber-Security Laboratory **508**
Guillermo Francia III, Aaron Garrett, Thomas Brookshire

Star Schema Implementation for Automation of Examination Records **515**
Muheet Ahmed Butt, S.M.K. Quadri, Majid Zaman

Building An FPGA-Based Computing Platform **522**
Mark White, Michael Gubody, Allison Nicol, Christopher Plachta, Jeremy Strawn, Cori Thompson, Tai-Chi Lee

Promoting Interdisciplinary Initiatives using New Technologies: Solutions to a Human-Computer Interaction Problem **528**
Rocio Abascal-Mena, Carlos R. Jaimez-Gonzalez, Erick Lopez-Ornelas, Wulfrano Arturo Luna, Sergio Zepeda

Utilizing Multi-Touch Technologies in Medical Rehabilitation: A Therapeutic Capstone Project **535**
L. Donnell Payne

National Center of Academic Excellence in Cyber Security and Information Assurance. An Implementation Case at Cameron University **541**
Pedro A. Diaz-Gomez, Mike Estep, Johnny Carroll, Reza Kamali

Comparative Study Between Professional Competences Developed in Engineering and Social Degrees **545**
Raquel Lacuesta-Gilaberte, Guillermo Palacios-Navarro, Pedro Ramos-Lorente

Using Crowdsourcing to Enhance Crisis Management **551**
Alfred C. Weaver, Joseph P. Boyle

Building Mobile Mashup Applications. Some Challenges Encountered in Computer Science Degrees **556**
Javier Diaz, Claudia Queiruga, Pablo Iuliano, Jorge Rosso, Isabel Kimura, Matias Brown Barnetche

Role of Game Programmers for Serious Games in Academia: Colleague, Collaborator and Client **561**
Kris Stewart, Mark Thompson, Jr., Abhishhek Sood, Sathyanarayan Chandrashekar, Megha Shaseendran, Mark Siprut, Khaled Morsi, Marilee Bresciani

A Heuristic Algorithm for Solving the Faculty Assignment Problem **566**
Manar I. Hosny

Reforming Introductory Computer Science Classes to Included Inquiry Based Projects **572**
Yenumula Reddy

Kinect Academy **577**
Stuart Anderson, Vu Pham, Monish Parajuli, Anh Pham, Majid Khan, Dat Tran, Dharmendra Sharma

Exploring the Use of Peer Mentors in Calculus to Support Retention Efforts in Engineering **581**
Deborah Worley, Jeremiah Neubert, Naima Kaabouch, Mohammad Khavanin

Study on Operating System Designing in Computer-integrated Education **586**
Liang Shi, Duoqian Miao

The use of ICT in Education: A Comparison of Traditional Pedagogy and Emerging Pedagogy Enabled by ICT's **590**
Munienge Mbodila, Kikunga Muhandji

CPU Design for Computer Integrated Experiment **594**
Shan Lu, Guangyao Li, Yijianan Wang

An Approach for Making a Class Seem Like the Real World **601**
Andrew Chen

VLSI Implementation of Residue Adder and Subtractor **604**
Omar Dajani, Gurinder Bawa, Harpreet Singh

SESSION: EDUCATIONAL ENVIRONMENTS, EVALUATION AND ASSESSMENT METHODS, VIRTUAL LABORATORIES, ANALYSIS TECHNIQUES AND WEB TECHNOLOGIES

Google and IBM Clouds Make Enterprise Computing Available to all Undergraduate CS Majors **611**
David Powell, Joel Hollingsworth

Standard Evaluation of Interventions for Those with Autism Spectrum Disorder **617**
Justin Ehrlich

Design of a Reconfigurable Virtual Computing Laboratory **623**
Simon Baev, Boris Peltsverger, Arvind Shah

Understanding Academic Assessment Mechanisms: A Case Study on the Impact of Western Education Influences in Asia **625**
Christine Amaldas, Avinash Shankaranarayanan, Kiminori Gemba

Japanese Sojourners in Higher Education Reform for Internationalization in Contemporary Japan **632**
Marystella Amaldas, Christine Amaldas, Avinash Shankaranarayanan

Using the N-Body Problem to Engage Undergraduates in Parallel Programming **638**
Ben White, Miriam Robinson, Chris Mitchell, Jens Mache

Analysis of Online and Blended Course Delivery and their Future in Academia **641**
S Srinivasan

Developed and Secured Website for Nigerian University **645**
Robert Okonigene, Samuel John, Clement Ojieabu, Aigbe Ihenyen