

2014 Zone 1 Conference of the American Society for Engineering Education

(ASEE Zone 1)

**Bridgeport, Connecticut, USA
3-5 April 2014**



**IEEE Catalog Number: CFP1412Y-POD
ISBN: 978-1-4799-5234-2**

TABLE OF CONTENTS

ASPECTS OF COLLABORATIONS BETWEEN COLLEGE OF ENGINEERING AT KING SAUD UNIVERSITY AND INDUSTRY	1
<i>Al-Mhaidib, Abdullah I.</i>	
THE COST OF PREVENTING A BUFFER OVERFLOW	5
<i>Anatoliy ; Gordonov, S.</i>	
AN INNOVATIVE APPROACH TO TEACHING AN UNDERGRADUATE ELECTROMAGNETICS, ANTENNAS AND PROPAGATION COURSE	9
<i>Crilly, Paul</i>	
CRITICAL SUCCESS FACTORS FOR WINNING ENTREPRENEURS AND THE ROLE OF AN INCUBATOR IN ACCELERATING THE GROWTH OF START-UPS AND EARLY STAGE COMPANIES	14
<i>Selig, Gad</i>	
EDUCATIONAL COMPUTER PROGRAM FOR SIMULATING BEHAVIOR OF STRUCTURES UNDER DYNAMIC LOADS	20
<i>Al-Maghrabi, Mohammed-Noor N. ; El-Abbasy, Ahmed A.Abdou</i>	
USING MATHEMATICS REVIEW TO ENHANCE PROBLEM SOLVING SKILLS IN GENERAL PHYSICS CLASSES	27
<i>Dehipawala, Sunil ; Shekoyan, Vazgen ; Yao, Haishen</i>	
WOLFBOT: A DISTRIBUTED MOBILE SENSING PLATFORM FOR RESEARCH AND EDUCATION	31
<i>Bethausser, Joseph ; Benavides, Daniel ; Schornick, Jeff ; O'Hara, Neal ; Patel, Jimit ; Cole, Jeremy ; Lobaton, Edgar</i>	
EFFICIENCY OF COLLEGE EDUCATION IN THE LABOR MARKET OF THE UNITED STATES	39
<i>Alpert, William ; Vaninsky, Alexander</i>	
A NEW ALGORITHM BASED ON DISCRETE FOURIER TRANSFORM TO IMPROVE THE LIFETIME OF UNDERWATER WIRELESS SENSOR NETWORKS COMMUNICATIONS	44
<i>Elmannai, Wafa ; Elleithy, Khaled ; Shrestha, Ajay ; Alshibli, Mohamed ; Alataas, Reem</i>	
STEGANOGRAPHY IN TEXT BY USING MS WORD SYMBOLS	49
<i>Odeh, Ammar ; Elleithy, Khaled ; Faezipour, Miad</i>	
LINEAR OBSERVERS DESIGN AND IMPLEMENTATION	54
<i>Radisavljevic-Gajic, Verica</i>	
AUTHENTICATED MULTIPARTY SECRET KEY SHARING USING QUANTUM ENTANGLEMENT SWAPPING	60
<i>Alshowkan, Muneer ; Elleithy, Khaled</i>	
QUANTIFYING SUSTAINABLE IMPROVEMENTS: INTERACTIONS OF ENERGY EFFICIENT CONSTRUCTION TECHNIQUES AND ESTIMATING THEIR EFFICIENCY	66
<i>Pustola, Kyle ; Aktas, Can B.</i>	
PERFORMANCE ANALYSIS OF WDM-PON FTTH USING DIFFERENT PULSE SHAPES AT 10 GBPS AND 20 GBPS	73
<i>Elrashidi, A. ; Ashry, I. ; Mahros, A. ; Alhaddad, M. ; Elleithy, K.</i>	
INVESTIGATING THE PERFORMANCE OF APODIZED FIBER BRAGG GRATINGS FOR SENSING APPLICATIONS	78
<i>Ashry, I. ; Elrashidi, A. ; Mahros, A. ; Alhaddad, M. ; Elleithy, K.</i>	
CAN WE USE A MATLAB APPLICATION TO IMPROVE STUDENT PERFORMANCE ON TRIGONOMETRY OF VECTOR PROBLEM SOLVING?	83
<i>McCusker, James ; Ma, Gloria ; Caserta, Frank</i>	
DATA FUSION MODELS IN WSNS: COMPARISON AND ANALYSIS	90
<i>Almasri, Marwah M ; Elleithy, Khaled M</i>	
DESIGN OF A SOLAR TRACKING SYSTEM FOR RENEWABLE ENERGY	96
<i>Juang, Jeng-Nan ; Radharamanan, R.</i>	
LEARNING ANOVA CONCEPTS USING SIMULATION	104
<i>Chandrakantha, Leslie</i>	
HIGH-LEVEL ABSTRACTIONS IN WIRELESS SENSOR NETWORKS: STATUS, TAXONOMY, CHALLENGES, AND FUTURE DIRECTIONS	109
<i>Alajlan, Abrar M. ; Elleithy, Khaled M.</i>	

DOES THE BIRKBECK TYPE BEDLOAD SEDIMENT TRAP EFFECT LOCAL FLOW VELOCITY?	116
<i>Finnie, John</i>	
THEORETICAL VERSUS PRACTICAL RESULTS OF AN ADVANCED POWER MODEL USED IN COMMUNICATIONS OF WIRELESS SENSOR NETWORKS	125
<i>Elleithy, Abdelrahman ; Liu, Gonhsin ; Pande, Varun</i>	
AUTOMATIC DETECTION AND CLASSIFICATION OF ACOUSTIC BREATHING CYCLES	131
<i>Yahya, Omar ; Faezipour, Miad</i>	
MR IMAGE ASSISTED DRUG DELIVERY IN RESPIRATORY TRACT AND TRACHEA TISSUES BASED ON AN ENHANCED LEVEL SET METHOD	136
<i>Daneshzand, Mohhammad ; Zoroofi, Reza A. ; Faezipour, Miad</i>	
DESIGN AND IMPLEMENTATION OF LEAST MEAN SQUARE ADAPTIVE FILTER ON FETAL ELECTROCARDIOGRAPHY	143
<i>Wasimuddin, Muhammad ; Gupta, Navarun</i>	
WEB-BASED PERSONALIZED LABORATORIES FOR ENGINEERING STUDENTS	148
<i>Sichel, Enid K. ; Woolf, Beverly Park ; Floryan, Mark</i>	
ROBOTS AND SMARTPHONES FOR ATTRACTING STUDENTS TO ENGINEERING EDUCATION	156
<i>Tewolde, Girma ; Kwon, Jaerock</i>	
DEVELOPING A SOFTWARE DEFINED NETWORKING CURRICULUM THROUGH INDUSTRY PARTNERSHIPS	162
<i>Sher-DeCusatis, Carolyn J. ; DeCusatis, Casimer</i>	
EM-SEP: AN EFFICIENT MODIFIED STABLE ELECTION PROTOCOL	169
<i>Malluh, Arafat Abu ; Elleithy, Khaled M. ; Qawaqneh, Zakariya ; Mstafa, Ramadhan J. ; Alanazi, Adwan</i>	
RANDOM WORD RETRIEVAL FOR AUTOMATIC STORY GENERATION	176
<i>Colon, Richard S. ; Patra, Prabir K. ; Elleithy, Khaled M.</i>	
A DEEPER UNDERSTANDING OF TECHNOLOGY IS NEEDED FOR WORKFORCE READINESS — PLAYING GAMES, TEXTING, AND TWEETS AREN'T ENOUGH TO MAKE STUDENTS TECH-SAVVY	182
<i>Piliouras, Teresa ; Yu, Raymond ; Villanueva, Kristin ; Chen, Yingxin ; Robillard, Holly ; Berson, Michael ; Lauer, Jeanne ; Sampel, Garret ; Lapinski, Daniel ; Attre, Maigh</i>	
A HIGHLY SECURE QUANTUM COMMUNICATION SCHEME FOR BLIND SIGNATURE USING QUBITS AND QUTRITS	190
<i>Malluh, Arafat Abu ; Elleithy, Khaled M. ; Alanazi, Adwan ; Mstafa, Ramadhan J.</i>	
A MAGNETIC MICROPUMP WITH TRI-MEMBRANE FULLY DIFFERENTIAL STRUCTURE	196
<i>Yu, Lile ; Xiao, Jingyun ; Xiong, Xingguo ; Patra, Prabir</i>	
LESSONS LEARNED FROM DEVELOPMENT OF A SOFTWARE TOOL TO SUPPORT ACADEMIC ADVISING	202
<i>Mattei, Nicholas ; Dodson, Thomas ; Guerin, Joshua T. ; Goldsmith, Judy ; Mazur, Joan M.</i>	
VISUAL DIFFERENTIAL CALCULUS	210
<i>Grossfield, Andrew</i>	
NYSID'S PROJECT CREATE: AN ORGANIZATIONAL MODEL FOR SERVICE LEARNING THROUGH ASSISTIVE TECHNOLOGY DEVELOPMENT	217
<i>Lever, Joseph A. ; Grosso, Andy</i>	
PHEROMONE TERMITE (PT) MODEL TO PROVIDE ROBUST ROUTING OVER WIRELESS SENSOR NETWORKS	224
<i>Razaque, Abdul ; Elleithy, Khaled</i>	
IMPROVING RETENTION BY MENTORING AND TUTORING FRESHMEN STUDENTS	230
<i>Satyanarayana, Ashwin ; Li, Hong ; Braneky, Josephine</i>	
IMPROVING SPATIAL REASONING ABILITY WHILE LEARNING ENERGY EFFICIENT CONSTRUCTION: STUDENTS WHO BUILD PHYSICAL MODELS VS. STUDENTS WHO DEVELOP 3D COMPUTER MODELS	235
<i>LoPiccolo, Orla Smyth</i>	
MOVING TOWARDS PROBLEMS ASSIGNMENTS WITH REDUCED GOAL-SPECIFICITY IN INTRODUCTORY STEM COURSES	242
<i>Shekoyan, Vazgen ; Guo, Wenli</i>	
DOES SELF-REGULATING E-LEARNING ASSIST IN SECONDARY SCHOOL PREPARATION FOR ENGINEERING EDUCATION?	249
<i>Millham, Richard ; Thakur, Surendra ; Malan, Chan</i>	
BUILDING SUSTAINABILITY INTO CONTROL SYSTEMS: PRELIMINARY ASSESSMENT OF A NEW FACILITIES-BASED AND HANDS-ON TEACHING APPROACH	254
<i>Baglione, Melody ; del Cerro, Gerardo</i>	

PROFESSIONAL EDUCATION FOR THE 21ST CENTURY WORKFORCE	262
<i>Gardiner, Keith M.</i>	
LABORATORY EXPERIMENTS FOR ENHANCED LEARNING OF ELECTROMECHANICAL DEVICES	267
<i>Bujanovic, Tomislav ; Ghosh, Prasanta</i>	
IMPLICATIONS OF UNCHECKED EXPONENTIAL GROWTH	272
<i>Kraft, David W.</i>	
MASTERY LEARNING IN STATICS USING THE STEM SI ONLINE LEARNING ENVIRONMENT	275
<i>Capaldi, Franco M.</i>	
RFID-BASED LOCALIZATION SYSTEM FOR MOBILE ROBOT WITH MARKOV CHAIN MONTE CARLO.....	278
<i>Zhang, Hui ; Chen, Joseph C ; Zhang, Kai</i>	
DEVELOPMENT OF COURSES DIRECTED ON FORMATION OF COMPETENCES DEMANDED ON THE MARKET OF IT TECHNOLOGIES.....	284
<i>Akhmed-Zaki, Darkhan ; Mansurova, Madina ; Pyrkova, Anna</i>	
THE ENHANCEMENT OF STUDENTS LEARNING THROUGH COMSOL SIMULATION PROJECTS	288
<i>Ngabonziza, Yves ; Delcham, Hendrick</i>	
REINTRODUCING SIX SIGMA DMAIC PROCESSES USING A HANDS ON APPROACH	294
<i>Chen, Joseph C ; Molnar, Mark</i>	
A MODEL TO BUILD, ASSESS, AND REFLECT ON STUDENTS' METACOGNITION THROUGH THE CLASSROOM DEBATE OF CONTROVERSIAL ENVIRONMENTAL ISSUES	300
<i>Baideme, Matthew P. ; Robbins, Cristian A. ; Starke, Jeffrey A.</i>	
PHYLOGENETIC ANALYSIS USING BAYESIAN MODEL.....	310
<i>Lu, Wei ; Hanrahan, Mike</i>	
OCEAN CIRCULATION IN A ROTATING TANK: AN OUTREACH PROJECT IN FLUID DYNAMICS	314
<i>Reckinger, Shanon M. ; Aca, Blanca ; Pitz, Katherine</i>	
MEMS DUAL-MODE ELECTROSTATICALLY ACTUATED MICROMIRROR.....	320
<i>Xiong, Xingguo ; Xie, Hanyu</i>	
AN OPPORTUNISTIC FREQUENCY CHANNELS SELECTION SCHEME FOR INTERFERENCE MINIMIZATION.....	327
<i>Rizvi, Syed ; Elleithy, Khaled ; Khan, Mustafa</i>	
MAGNETOTAXIS FOR NANOFABRICATION.....	333
<i>Macwan, Isaac G. ; Zhao, Zihe ; Sobh, Omar T. ; Patra, Prabir K.</i>	
USE OF SMART TABLE IN EDUCATIONAL INSTITUTIONS TO ENHANCE STUDENT LEARNING PERFORMANCE	343
<i>Jalal, Naif ; Tenney, Dan</i>	
SERVICE-LEARNING PROJECTS IN ENVIRONMENTAL ENGINEERING COURSES: MODELS OF COMMUNITY ENGAGEMENT ACTIVITIES.....	351
<i>Kulkarni, Tara</i>	
GOAL DIRECTED DESIGN OF SERIAL ROBOTIC MANIPULATORS.....	358
<i>Patel, Sarosh ; Sobh, Tarek</i>	
ENHANCING ASSESSMENT OF EXPERIENTIAL LEARNING IN ENGINEERING EDUCATION THROUGH ELECTRONIC PORTFOLIOS.....	364
<i>Halada, Gary P. ; Wozniak, Nancy McCoy</i>	
USING THE EPSA RUBRIC TO EVALUATE STUDENT WORK ON ETHICS CASE STUDIES IN A PROFESSIONAL ISSUES COURSE	372
<i>Schmeckpeper, Edwin R. ; Kelley, Mike ; Beyerlein, Steve</i>	
CREATING AN ECONOMICAL SOLAR DECATHLON HOUSE.....	378
<i>Schmeckpeper, Edwin R. ; Lutz, Matthew P. ; Michael Puddicombe, R.A. ; Mountain, Jeffrey R. ; Patterson, Jack</i>	
EXPLORING ELECTROCHEMICAL TECHNOLOGY: A PERSPECTIVE ON THE ASEE/NSF SMALL BUSINESS POSTDOCTORAL RESEARCH DIVERSITY FELLOWSHIP	385
<i>Renner, Julie N. ; Ayers, Kathy E.</i>	
SEVEN V'S OF BIG DATA UNDERSTANDING BIG DATA TO EXTRACT VALUE.....	390
<i>Khan, M.Ali-ud-din ; Uddin, Muhammad Fahim ; Gupta, Navarun</i>	
AUTHOR INDEX	