

# **International Conference on Measurement Instrumentation and Electronics 2016 (ICMIE 2016)**

MATEC Web of Conferences Volume 75 (2016)

Munich, Germany  
6 - 8 June 2016

## **Editors:**

**Axel Sikora  
Ben Choi  
Wang Shuhui**

ISBN: 978-1-5108-2928-2

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

This work is licensed under a Creative Commons Attribution license:  
<http://creativecommons.org/licenses/by/2.0/>

**You are free to:**

**Share** – copy and redistribute the material in any medium or format.

**Adapt** – remix, transform, and build upon the material for any purpose, even commercial.

The licensor cannot revoke these freedoms as long as you follow the license terms.

**Under the following terms:**

You must give appropriate credit, provide a link to the license, and indicate if changes were made.

You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use. The copyright is retained by the corresponding authors.

Printed by Curran Associates, Inc. (2016)

For additional information, please contact EDP Sciences – Web of Conferences  
at the address below.

EDP Sciences – Web of Conferences  
17, Avenue du Hoggar  
Parc d'Activité de Courtabœuf  
BP 112  
F-91944 Les Ulis Cedex A  
France

Phone: +33 (0) 1 69 18 75 75

Fax: +33 (0) 1 69 28 84 91

[contact-edps@webofconferences.org](mailto:contact-edps@webofconferences.org)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2633  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

<b>HARDWARE DESIGN OF A SUBMERGED BUOY SYSTEM BASED ON ELECTROMAGNETIC INDUCTIVE COUPLING</b> .....	1
<i>Song Dalei, Gao Shan, Xu Ming, Wang Xiangdong, Wang Yutao</i>	
<b>NON-CONTACT MEASUREMENT OF CEREAL QUALITY BY IMAGE SENSING AND NUMERICAL REGRESSION TECHNIQUES</b> .....	6
<i>Hussein W. B., Moaty A. A., Nagaty K. A., Hussein M. A.</i>	
<b>AN APPROACH OF ELECTRONIC SUBDIVIDING METHOD FOR MEASURING STRAIGHTNESS AND DISPLACEMENT OF A PRECISION LINEAR STAGE SIMULTANEOUSLY</b> .....	11
<i>Tsai Hsiu-An, Chen Shao-Ching</i>	
<b>TESTING EQUATION METHOD MODIFICATION FOR DEMANDING ENERGY MEASUREMENTS VERIFICATION</b> .....	16
<i>Elena Kochneva, Andrew Pazderin, Alexandar Sukalo</i>	
<b>STUDY ON THE DETECTION OF TRANSFORMER OIL TEMPERATURE</b> .....	21
<i>Zhou Kehui, Huang Yuanliang, Li Hongqi, Sun Tengyu</i>	
<b>RESEARCH ON THE OPTICAL PROPERTIES OF TRANSFORMERS PARTIAL DISCHARGE BASED ON DIFFERENT DISCHARGE MODELS</b> .....	25
<i>Wei Bengang, Huang Hua, Huang Chao, Wang Liming</i>	
<b>WALL PRESSURE SIGNATURES OF TURBULENT FLOW OVER LONGITUDINAL</b> .....	30
<i>Abdulbari Hayder A., Mahammed Hassan D., Yaacob Zulkefli B., Mahmood Wafaa K.</i>	
<b>MACHINABILITY AND TRIBOLOGICAL PROPERTIES OF STIR CAST LM6/SIC/GR HYBRID METAL MATRIX COMPOSITE</b> .....	35
<i>Tahat Montasser S.</i>	
<b>AN EXPERIMENT STUDY ON SURFACE ROUGHNESS IN HIGH SPEED MILLING NAK80 DIE STEEL</b> .....	39
<i>Su Fa, Lian Guofu</i>	
<b>STIFFNESS OF SERIAL AND QUASI-SERIAL MANIPULATORS: COMPARISON ANALYSIS</b> .....	44
<i>Klimchik Alexandr, Magid Evgeni, Caro Stephane, Waiyakan Kriangkrai, Pashkevich Anatol</i>	
<b>HUMIC ACID DEGRADATION BY ZNO PHOTOCATALYST</b> .....	49
<i>Sekartaji Putri A., Babel Sandhya</i>	
<b>CLASSIFICATION OF TEXTURES USING FILTER BASED LOCAL FEATURE EXTRACTION</b> .....	54
<i>Bocekci Veysel Gokhan, Yildiz Kazim</i>	
<b>MULTI-LANGUAGE SENTIMENT ANALYSIS FOR HOTEL REVIEWS</b> .....	58
<i>Sodanil Maleerat</i>	
<b>IMPLEMENTATION OF EDGE DETECTION DIGITAL IMAGE ALGORITHM ON A FPGA</b> .....	62
<i>Bougangs Issam, Sbihi Mohamed, Zaim Mounia</i>	
<b>IMAGE PROCESSING METHODS USABLE FOR OBJECT DETECTION ON THE CHESSBOARD</b> .....	67
<i>Beran Ladislav, Chmelar Pavel, Rejtek Lubos</i>	
<b>THE DEPTH MAP CONSTRUCTION FROM A 3D POINT CLOUD</b> .....	73
<i>Chmelar Pavel, Beran Ladislav, Rejtek Lubos</i>	
<b>THEORETICAL ASPECTS OF AEROSPACE IMAGE PROCESSING IN QUASI TWO- DIMENSIONAL SPECTRAL SPACE</b> .....	78
<i>Kostrov B.V., Grigorenko D.V., Ruchkin V.N., Fulin V.A.</i>	
<b>APPLICATION AND OPTIMIZATION OF KALMAN FILTER FOR BASEBAND SIGNAL PROCESSING OF GPS RECEIVERS</b> .....	83
<i>He Yanpin, Li Weimin, Bi Bo</i>	
<b>IMAGE HAZE REMOVAL USING DARK CHANNEL PRIOR AND INVERSE IMAGE</b> .....	89
<i>Shi Lei, Cui Xiao, Yang Li, Gai Zhigang, Chu Shibo, Shi Jing</i>	
<b>ESTIMATION FOR TORQUES APPLIED TO THE MASTER SIDE IN A CONSTRUCTION ROBOT TELEOPERATION SYSTEM</b> .....	93
<i>Huang Lingtao, Li Yanan, Ni Tao, Huang Haidong</i>	
<b>A QUARTER ACTIVE SUSPENSION SYSTEM BASED GROUND-HOOK CONTROLLER</b> .....	97
<i>Turnip Arjon</i>	
<b>DESIGN OF EEG SIGNAL ACQUISITION SYSTEM USING ARDUINO MEGA1280 AND EEGANALYZER</b> .....	102
<i>Saptono Debyo, Wahyudi Bambang, Irawan Benny</i>	

<b>DEVELOPMENT OF LOGISTIC SUPPORT FOR SPACE EQUIPMENT ON THE BASE OF THE “SAIL-BMSTU” MIDGET SPACECRAFT .....</b>	<b>106</b>
<i>Brom Alla, Gorlacheva Evgeniya</i>	
<b>MULTIPURPOSE MONITORING SYSTEM FOR ICEBREAKERS: DEVELOPMENT, IMPLEMENTATION, AND TESTING .....</b>	<b>111</b>
<i>Zhirnov Andrey, Anufriev Maxim, Pozhar Nikolay, Stepanov Konstantin, Chernutsky Anton, Makhrov Ilya, Nesterov Evgeniy, Shelestov Dmitriy, Koshelev Kirill, Fedorov Aleksey, Karasik Valeriy, Pnev Alexey</i>	
<b>THE STUDY OF THE DYNAMICS OF THE SPACECRAFT LANDING ON A CELESTIAL BODY WITH MICROGRAVITY UNDER DIFFERENT FIXING CONDITIONS .....</b>	<b>115</b>
<i>Danhe Chen, Koryanov Vsevolod V.</i>	
<b>ONE-WAY FSI SIMULATION OF THE PHASE AND THE GEOMETRIC PARAMETERS OF THE MODEL OF COMPRESSOR BLADES ON THE OSCILLATING GAS-DYNAMIC PROCESSES .....</b>	<b>119</b>
<i>Nikolayevna Butymova Liliia, Yakovlevich Modorskii Vladimir</i>	
<b>AN INCREASE IN ESTIMATION ACCURACY POSITION DETERMINATION OF INERTIAL MEASUREMENT UNITS .....</b>	<b>123</b>
<i>Beran Ladislav, Chmelar Pavel, Rejfeek Lubos</i>	
<b>A DECISION-MAKING METHOD FOR LANDING ROUTES OF AIRCRAFT ON THE CARRIER .....</b>	<b>129</b>
<i>Wu Yu, Tan Wenqian, Sun Liguo, Qu Xiangju</i>	
<b>SEGMENTATION OF THE OPTIC DISC AND OPTIC CUP USING HISTOGRAM FEATURE-BASED ADAPTIVE THRESHOLD FOR CUP TO DISK RATIO .....</b>	<b>135</b>
<i>Nugraha Gibran Satya, Soesanti Indah</i>	
<b>SMOOTH PATH PLANNING BY FUSION OF ARTIFICIAL POTENTIAL FIELD METHOD AND COLLISION CONE APPROACH .....</b>	<b>140</b>
<i>Kim Yong Hwi, Son Wan-Sic, Park Jin Bae, Yoon Tae Sung</i>	
<b>CONTROL ALGORITHM TRAJECTORY PLANNING FOR DUAL COOPERATIVE MANIPULATORS WITH EXPERIMENTAL VERIFICATION .....</b>	<b>144</b>
<i>Omar Ahmed, Ri Pan, Zhang Yajun</i>	
<b>ANALYSIS OF THE REASONABLENESS OF THE CURRENT LEVEL OF REQUIRED ACCURACY OF SATELLITE NAVIGATION OF CONSUMER SYSTEMS CIVIL MOBILE MEANS .....</b>	<b>149</b>
<i>Lysenko Lev N., Koryanov Vsevolod V., Toporkov Alexey G.</i>	
<b>MUTUAL COUPLING REDUCTION BETWEEN VERY CLOSELY SPACED MICROSTRIP ANTENNAS USING CPW STRUCTURE .....</b>	<b>154</b>
<i>Ma Xiao-zun, Zhao Ming-yang, Zhang De-feng, Liu Peng-jun</i>	
<b>BER PERFORMANCE OF QAM AND QPSK MODULATION TECHNIQUE FOR DCT BASED CHANNEL ESTIMATION OF STBC MIMO OFDM .....</b>	<b>158</b>
<i>Sarmin Suzi Seroja, Sulong Siti Maisurah, Abu Hasan Asa'Ari Nurhuda</i>	
<b>PERFORMANCE EVALUATION OF MODIFIED SLM TECHNIQUE IN OFDM SYSTEM USING SELECTED CODEWORD SHIFT .....</b>	<b>163</b>
<i>Abdullah Ezmin, Idris Azlina, Saparon Azilah</i>	
<b>DYNAMIC MULTI THRESHOLD PRIORITY PACKET SCHEDULING ALGORITHMS .....</b>	<b>168</b>
<i>Dag Tamer, Uzungenc Sezer</i>	
<b>TITAN TTCN-3 BASED TEST FRAMEWORK FOR RESOURCE CONSTRAINED SYSTEMS .....</b>	<b>173</b>
<i>Yushev Artem, Schappacher Manuel, Sikora Axel</i>	
<b>AUTOMATED PHYSICAL TESTBEDS FOR EMULATION OF WIRELESS NETWORKS .....</b>	<b>178</b>
<i>Sikora Axel, Jubin Sebastian E, Yushev Artem, Schmitt Edgar, Schappacher Manuel</i>	
<b>SPEECH RECOGNIZING FOR PRESENTATION TOOL NAVIGATION USING BACK PROPAGATION ARTIFICIAL NEURAL NETWORK .....</b>	<b>183</b>
<i>Hasanah Nur, Irmawati Dessy, Arifin Fatchul, Marpanaji Eko</i>	
<b>PERFORMANCE DEGRADATION ESTIMATION OF ROBOT IN HIGHLY RADIOACTIVE ENVIRONMENT: SERVO MOTOR CONTROL .....</b>	<b>188</b>
<i>Li Shimeng, Wang Hongfei, Zheng Yuan F., Cao Lei (Raymond)</i>	
<b>ROBOTIC VISION SYSTEM FOR RANDOM BIN PICKING WITH DUAL-ARM ROBOTS .....</b>	<b>193</b>
<i>Kang Sangseung, Kim Kyekyung, Lee Jaeyeon, Kim Joongbae</i>	
<b>RESEARCH AND IMPLEMENTATION OF AUTOMATIC FUZZY GARAGE PARKING SYSTEM BASED ON FPGA .....</b>	<b>198</b>
<i>Wang Kaiyu, Yu Zongmin, Guan Sanghai, Yang Xing, Sheng Menglin, Tang Zhenan</i>	
<b>SPEED AND DISPLACEMENT CONTROL SYSTEM OF BEARINGLESS BRUSHLESS DC MOTOR BASED ON IMPROVED BACTERIAL FORAGING ALGORITHM .....</b>	<b>203</b>
<i>Diao Xiaoyan, Zhu Huangqiu, Zhang Duo</i>	

<b>CHINESE SEAL CLASP-MEETING TECHNOLOGY AND ELEGANCE WITH FUNCTIONAL GOALS</b> .....	208
<i>Kong Mario, Mendes Vanessa</i>	
<b>APPLICATION OF CAD/CFD/RP-TECHNOLOGIES FOR DEVELOPMENT OF LVAD SYSTEMS</b> .....	213
<i>Morozov Valentin, Zhdanov Alexey, Belyaev Leonid</i>	
<b>IMPACT OF FAMILIARITY ON INFORMATION COMPLEXITY IN HUMAN-COMPUTER INTERFACES</b> .....	217
<i>Bakaev Maxim</i>	
<b>CLUSTER MANAGEMENT OF COMPUTING RESOURCES</b> .....	222
<i>Ruchkin V.N., Makhmudov M.N., Romanchuk V.A., Fulin V.A., Kostrov B.V.</i>	
<b>CREATION OF COLLISION DATA BASE THROUGH THE “BOTTOM-UP” APPROACH</b> .....	226
<i>Brom Alla, Gorchacheva Evgeniya, Omelchenko Irina</i>	
<b>INTEGRATION OF MULTI-FEATURE FUSION AND PLS-DA IN PROTEIN SECONDARY STRUCTURE PREDICTION</b> .....	231
<i>Huang Guangzao, Tang Meishuang, Guan Jinting, Zhou Sun, Zhu Wenbing, Ji Guoli</i>	
<b>SELF-STOPPING ACTUATING MECHANISM WITH HIGH COEFFICIENT OF EFFICIENCY OF THE FORWARD STROKE FOR LINEAR MOTION DRIVES</b> .....	236
<i>Morozov Valentin, Zhdanov Alexey</i>	
<b>NUMERICAL MODELING OF DEFORMATION AND VIBRATIONS IN THE CONSTRUCTION OF LARGE-SIZE FIBERGLASS COOLING TOWER FAN</b> .....	241
<i>Fanisovich Shmakov Arthur, Yakovlevich Modorskii Vladimir</i>	
<b>THE FUNCTIONALLY SIMILAR TO ADAPTIVE NONLINEAR ALGORITHM FOR CONTROL OF DYNAMIC PLANT WITH LIMITED UNCERTAINTY</b> .....	245
<i>Polyakhov N.D., Stotckaia A.D.</i>	
<b>MODELLING OF DYNAMICALLY STABLE AR-601M ROBOT LOCOMOTION IN SIMULINK</b> .....	249
<i>Khusainov Ramil, Sagitov Artur, Klimchik Alexander, Magid Evgeni</i>	
<b>GOLF CART PROTOTYPE DEVELOPMENT AND NAVIGATION SIMULATION USING ROS AND GAZEBO</b> .....	254
<i>Shimchik Ilya, Sagitov Artur, Afanasyev Ilya, Matsuno Fumitoshi, Magid Evgeni</i>	
<b>REVIEW RESULTS ON WING-BODY INTERFERENCE</b> .....	259
<i>Frolov Vladimir</i>	
<b>STUDY OF EBSD EXPERIMENT PARAMETERS INFLUENCE ON COMPUTATION OF POLYCRYSTALLINE POLE FIGURES AND ORIENTATION DISTRIBUTION FUNCTION</b> .....	265
<i>Antonova Anastasia O., Dzhumaev Pavel S., Savyolova Tatyana I.</i>	
<b>NUMERICAL ANALYSIS OF NONLINEAR OSCILLATORY PROCESSES IN COLUMNS AT DRILLING OIL AND GAS WELL</b> .....	269
<i>Khajiyeva Lelya, Mardonov Batyrgan, Amanov Sirozhiddin, Kydyrbekuly Almatbek</i>	
<b>ASSESSMENT OF IMPACT OF BOREHOLE HEAT EXCHANGER DESIGN ON HEAT EXTRACTION/REJECTION EFFICIENCY</b> .....	274
<i>Gornov V.F., Peskov N.V., Vasilyev G.P., Kolesova M.V.</i>	
<b>FOURTH-ORDER PERTURBED EIGENVALUE EQUATION FOR STEPWISE DAMAGE DETECTION OF AEROPLANE WING</b> .....	279
<i>Wong Chun Nam, Tang Kongzheng, Jin Wuyin, Tu Gaoqiao</i>	
<b>RESEARCH ON THE COMPARISON OF SOLAR POWER GENERATION WITH DIFFERENT TECHNOLOGY PATHS</b> .....	285
<i>Ren Yuan, Nie Dan, Yan Wei</i>	
<b>GENETIC ALGORITHM APPLYING TO CALCULATE THE GREAT WALL SOIL WATER ELECTRICAL CONDUCTIVITY</b> .....	289
<i>Zhang Wanxu, Yan Yang, Jiang Bo, Wang Lin, Liu Cheng</i>	
<b>STUDY OF KEY NON-DIMENSIONAL PARAMETERS FOR WAVE DRAG REDUCTION WITH HIGH-FREQUENCY REPETITIVE LASER PULSE ENERGY DEPOSITIONS</b> .....	293
<i>Qing Zexu, Hong Yanji, Wang Diankai, Zhang Bin</i>	
<b>RESEARCH ON AND DESIGN OF KEY CIRCUITS IN RFID TAG CHIP FOR CONTAINER MANAGEMENT</b> .....	297
<i>Wang Wenjie</i>	
<b>NEW BROADBAND PREDISTORTION LINEARIZER USING BALANCED CIRCUITS STRUCTURE FOR SATELLITE TWTAS</b> .....	301
<i>Chen Changwei, Cao Yong, Qin Kaiyu</i>	

<b>A STUDY ON HIGH DENSITY GATE-OXIDE ANTI-FUSE PROM MEMORY CELL PROGRAM FEATURES</b> .....	305
<i>Yang Keqin, Yue Suge, Lu Shijin</i>	
<b>A NOVEL 3-INPUT AND/XOR GATE CIRCUIT FOR REED-MULLER LOGIC APPLICATIONS</b> .....	310
<i>Yang Yuan, Xia Yinshui, Qian Libo</i>	
<b>Author Index</b>	