

# **6th International Conference on Applied Science, Engineering and Technology (ICASET 2016)**

Advances in Engineering Research Volume 77

Qingdao, China  
29 – 30 May 2016

## **Editors:**

**Peilong Xu**  
**Hongzong Si**

**Xiaonan Xiao**  
**X.S. George Zhao**

ISBN: 978-1-5108-2381-5

**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.**

Copyright© (2016) by Atlantis Press  
All rights reserved.  
<http://www.atlantis-press.com/php/pub.php?publication=icaset-16>

Printed by Curran Associates, Inc. (2016)

For permission requests, please contact the publisher:

Atlantis Press  
Amsterdam / Paris

Email: [contact@atlantis-press.com](mailto:contact@atlantis-press.com)

**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

## **CHAPTER I PRODUCTS AND SYSTEMS DESIGN, MODELLING AND SIMULATION, INTELLIGENT AUTOMATION AND CONTROL SYSTEMS**

<b>A FIXED-LOADED INTERFACE COMPONENT MODE SYNTHESIS METHOD FOR DYNAMIC ANALYSIS OF A FOLDING WING</b> .....	1
<i>Yingge Ni, Xiaopeng Wan, Meiyong Zhao</i>	
<b>A STUDY OF ENERGY RECOVERY SYSTEM DURING BRAKING FOR ELECTRIC VEHICLE</b> .....	8
<i>Lin Zheng, Zhanqun Shi, Yuegang Luo, Jing Kang</i>	
<b>A OPERATIONAL RISK EVALUATION RESEARCH FOR INSTRUMENT LANDING SYSTEM</b> .....	14
<i>Rui Zhang, Yong Fan, Rong Cheng</i>	
<b>DESIGN OF FREQUENCY CHARACTERISTIC TEST INSTRUMENT BASED ON USB</b> .....	20
<i>Zhengling Wu, Nannan Zhang</i>	
<b>APPLICATION OF TRIO MOTION CONTROLLER IN THE CONTROL SYSTEM OF GLASS ENGRAVING MACHINE</b> .....	28
<i>Hua-Yang Zhao, Da-Peng Liu</i>	
<b>DESIGN OF VIRTUAL MULTIMETER BASED ON VIIS-EM PLATFORM</b> .....	33
<i>Zhengling Wu, Haiyan Wu</i>	
<b>APPLICATION OF AN IMPROVED APRIORI ALGORITHM IN INTELLIGENCE GREENHOUSE SYSTEM</b> .....	40
<i>Xiao-Guo Liu, Yu Chen</i>	
<b>RESEARCH ON THE ACCURATE CONTINUOUS CALIBRATION SYSTEM FOR CURRENT TRANSFORMER</b> .....	45
<i>Yonghong Fan, Jiandong Zhao, Huaguang Li</i>	
<b>MECHANICAL PROVING FOR ERDOS-SZEKERES PROBLEM</b> .....	49
<i>Meijing Shan</i>	
<b>RESEARCH ON INTELLIGENT PICKING-ROBOT SYSTEM BASED ON FPGA AND NEURAL NETWORK</b> .....	54
<i>Hai-Liu Xiao, Yan-Ping Wei</i>	
<b>RESEARCH ON THE ELECTRONIC CIRCUITS RELIABILITY TOLERANCE ANALYSIS METHOD AND ITS APPLICATION</b> .....	60
<i>Yonghong Fan, Na Li, Jianguo Zhang</i>	
<b>THEORY AND APPLICATION OF DRILLING DRAINAGE RADIUS DETERMINATION BASED ON DRILL GAS FLOW METHOD</b> .....	64
<i>Ying Zhu, Linchao Dai, Kai Wang</i>	
<b>DESIGN OF BEEF CATTLE FEEDING SYSTEM BASED ON MOTION CONTROLLER</b> .....	68
<i>Xiao-Qiang Wu, Da-Peng Liu</i>	
<b>THE FOUR-LEGGED LOADED ROBOT DESIGN BASED ON MCU CONTROL</b> .....	73
<i>Baohua Jiang, Qiang Qi</i>	
<b>THE APPLICATION OF TRIO CONTROLLER IN THE CONTROL SYSTEM OF CUTTING ROBOT DESIGN OF BEEF CATTLE FEEDING SYSTEM BASED ON MOTION CONTROLLER</b> .....	77
<i>De-Hui Zhang, Da-Peng Liu</i>	
<b>THE DESIGN OF AUTOMATIC TEMPERATURE AND HUMIDITY RECORDER</b> .....	82
<i>Yu-Jie Chen, Pei-Xue Liu, Jin-Tao Luo, Wen-Xiu Xu</i>	
<b>RESEARCH AND APPLICATION FOR KEY TECHNOLOGIES OF CONTAINER AUTOMATED GUIDED VEHICLE (AGV) AT PORT</b> .....	87
<i>Rui Yang, Wei Zhang</i>	
<b>FOOD COLD CHAIN LOGISTICS BASED ON INTERNET OF THINGS TECHNOLOGY</b> .....	92
<i>Xiao-Guo Liu, Min-Hua Xu, Chen Yu</i>	
<b>DESIGN OF PLATE ROLLING MACHINE BASED ON TRIO MOTION CONTROLLER</b> .....	97
<i>Chun-You Zhang, Da-Peng Liu</i>	
<b>DESIGN AND DEVELOPMENT OF AUTOMATION PRODUCTION CONTROL SYSTEM FOR PRODUCTION LINE</b> .....	102
<i>Yongqiu Liu, Jijin Zhu</i>	
<b>DESIGN OF COAL MINE MULTI-JOINT SNAKE-LIKE RESCUE ROBOT BASED ON ARM</b> .....	107
<i>Hongyan Li, Yuanbin Hou</i>	

**CHAPTER II SIGNAL AND IMAGE PROCESSING, INTELLIGENT RECOGNITION,  
INTELLIGENT ALGORITHMS AND METHODS, COMPUTATIONAL MATHEMATICS**

<b>WAVE EQUATIONS FOR PRESTACK REVERSE-TIME MIGRATION .....</b>	<b>113</b>
<i>Qiqiang Yang</i>	
<b>HYBRID SYNCHRONIZATION OF FRACTIONAL ORDER CHAOTIC SYSTEMS.....</b>	<b>117</b>
<i>Xue-Feng Liang, Li-Xin Yang</i>	
<b>THE EVALUATION MODEL AND ITS APPLICATION TO UNIVERSITY LABORATORY SAFETY BASED ON BP NEURAL NETWORK .....</b>	<b>121</b>
<i>Yu Chen, Xiao-Guo Liu</i>	
<b>RESEARCH ON ANTI-JAMMING ALGORITHM IMPLEMENTATION OF GPS SIGNAL.....</b>	<b>126</b>
<i>Youhui Zhang, Rui Zhang</i>	
<b>OPTIMIZATION AND IMPLEMENTATION OF IMAGE COMPRESSION ALGORITHM BASED ON NEURAL NETWORK .....</b>	<b>130</b>
<i>Jing Hu, Xianbin Xu, Xuefeng Pan, Lingmin Liu</i>	
<b>ANALYSIS OF DYNAMICAL BEHAVIOR IN HYPER-CHAOTIC COMPLEX SYSTEM .....</b>	<b>137</b>
<i>Xue-Feng Liang</i>	
<b>PRESTACK SYNTHESIZED AREL SHOT RECORD REVERSE-TIME MIGRATION.....</b>	<b>141</b>
<i>Qiqiang Yang</i>	
<b>BIFURCATION OF A FRACTIONAL-ORDER COMPLEX SYSTEM .....</b>	<b>145</b>
<i>Honggang Dang, Xiaoya Yang, Xiaojun Liu</i>	
<b>APPLICATION OF BEARING DIAGNOSIS BASED ON WAVELET PREPROCESSING NEURAL NETWORK.....</b>	<b>149</b>
<i>Jiang-Bo Chen, Shi-Xian Zeng, Yan Li</i>	
<b>SYNCHRONIZATION OF A FRACTIONAL-ORDER COMPLEX SYSTEM .....</b>	<b>154</b>
<i>Honggang Dang, Xiaoya Yang, Xiaojun Liu</i>	
<b>RESEARCH STATUS AND PROSPECTS OF COAL SEAM GAS CONTENT PREDICTION BASED ON MATHEMATICAL MODEL.....</b>	<b>158</b>
<i>Linchao Dai</i>	
<b>SHORT-TERM CRUDE OIL SCHEDULING MODELING AND ALGORITHM WITH HIGH FUSION POINT OIL AND TWO PIPELINES TRANSPORTATION BASED ON PRIORITY-SLOT .....</b>	<b>163</b>
<i>Yuming Zhao</i>	
<b>RESEARCH AND APPLICATION OF QUALITY DETECTION METHOD FOR CORN OIL BASED ON NEURAL NETWORK ALGORITHM.....</b>	<b>169</b>
<i>Wei-Feng Gao, Ming-Fen Wu</i>	
<b>ONLINE MEDIA COMMUNICATION PERFORMANCE STATISTICS BASED ON BAYESIAN ALGORITHM .....</b>	<b>175</b>
<i>Xiaoxing Ma</i>	

**CHAPTER III INFORMATION TECHNOLOGY AND NETWORKS APPLICATIONS, DATA  
MANAGEMENT AND SOFTWARE, INTERNET AND COMMUNICATIONS TECHNOLOGIES**

<b>RESEARCH ON MAC PROTOCOL FOR UNDERWATER ACOUSTIC SENSOR NETWORKS .....</b>	<b>181</b>
<i>Cheng Yin, Wei Wang, Hui Xi</i>	
<b>CONSTRUCTION OF SMART CAMPUS SYSTEM BASED ON CLOUD COMPUTING.....</b>	<b>187</b>
<i>Xiaofei Cheng, Rui Xue</i>	
<b>THE DEVELOPMENT OF COMPUTER MANAGEMENT INFORMATION SYSTEM FOR THE TEST CRITERION OF FOOD SAFETY OF LARGE-SCALE SHOPPING MALLS .....</b>	<b>192</b>
<i>Tong Jiang, Dong Xie, Guangjun Guo, Yan Zhang</i>	
<b>RESEARCH ON VEHICLE HIGH SPEED MOTION STABILITY AND SIMULATION BASED ON COMPUTER AIDED DESIGN .....</b>	<b>197</b>
<i>Zhensheng Zhang, Hailing Han, Rui Li, Xingyuan Zhang</i>	
<b>KEYWORD QUERIES BY MATCHING SYNONYMS IN RELATIONAL DATABASES.....</b>	<b>203</b>
<i>Dingfang Huang, Dong Xie, Heyun Liu</i>	
<b>STUDY ON THE INSPECTION TESTING &amp; CERTIFICATION BY GAME THEORY .....</b>	<b>209</b>
<i>Zhaoying Zuo, Deshan Tang, Shangrui Wu, Xiaodan Yang, Jian Sun, Yixian Wang</i>	
<b>RESEARCH ON THE STATUS AND DEVELOPMENT TRENDS OF EMBEDDED SOFTWARE TECHNOLOGY .....</b>	<b>213</b>
<i>Changlin He, Yufen Li</i>	

<b>PRESENT SITUATION OF WEB INFORMATION SEARCH AND ITS IMPROVEMENT STRATEGY</b> .....	217
<i>Tang Lin</i>	
<b>ANALYSIS OF COMPETITION BETWEEN OPEN SOURCE SOFTWARE AND PROPRIETARY SOFTWARE</b> .....	224
<i>Jian Dong Zhao, Ying Liu, Li Zhu</i>	
<b>THE RESEARCH AND DESIGN OF WEARABLE SMART BLIND GUIDANCE</b> .....	228
<i>Rui Xue, Shixian Zeng</i>	
<b>RESEARCH ON MULTIDIMENSIONAL DATA STORAGE MODEL BASED ON RELATIONAL DATABASE</b> .....	233
<i>Yan Zhang, Dong Xie, Guangjun Guo, Tong Jiang</i>	
<b>RESEARCH FOR MULTI-SOURCE DATA MANAGEMENT SYSTEM OF DIGITAL MINE</b> .....	237
<i>Shiyao Xiang</i>	
<b>RESEARCH ON DISTRIBUTED WIRELESS SENSOR NETWORK COMMUNICATION PROTOCOL</b> .....	241
<i>Yan Zhang, Dong Xie, Guangjun Guo, Tong Jiang</i>	
<b>RESEARCH ON APPLICATION OF DATABASE FORENSICS TECHNOLOGY</b> .....	245
<i>Qin Liu</i>	
<b>STUDY ON AN INTERACTIVE ROAMING CONTROL SCHEME FOR INDUSTRIAL PRODUCTS BASED ON VIRTUAL REALITY TECHNOLOGY</b> .....	251
<i>Yimin Su</i>	
<b>RESEARCH ON THE APPLICATION OF NFC TECHNOLOGY IN ELECTRONIC COMMERCE MOBILE PAYMENT</b> .....	255
<i>Chunlei Han, Fangfang Liu, Xia Hou</i>	

#### **CHAPTER IV MATERIALS SCIENCE AND TECHNOLOGY, CHEMICAL ENGINEERING**

<b>IMPROVEMENT OF NITROGEN-PHOSPHORUS INTUMESCENT FLAME RETARDANT AND ITS APPLICATION IN POLYSTYRENE RETARDANT</b> .....	260
<i>Chunxue Wang, Xiao Suo</i>	
<b>STUDY ON MULTISPECTRAL STEALTH COMPOSITES</b> .....	265
<i>Rongwang Guo, Liangyan Jiang, Wannian Zhu</i>	
<b>PREPARATION OF EVA/PVA/PU MULTI-COMPONENT WATER-BASED ADHESIVE</b> .....	269
<i>Ning-Bo Huo, Chun-Hai Zhao</i>	
<b>STUDY ON ANTI-HYGROTHERMAL AGING PROPERTIES OF TPS HOT-MELT ADHESIVE</b> .....	275
<i>Ning-Bo Huo, Chun-Hai Zhao</i>	
<b>ARYLOXY AMIDE HERBICIDE: FLUFENACET</b> .....	281
<i>Ning-Bo Huo, Chun-Hai Zhao</i>	
<b>IMPLEMENTATION OF CORROSION PREVENTION PRACTICES FOR GROUND VEHICLES</b> .....	286
<i>Xuecheng Zhang, Qixun Liu, Lu Jiang</i>	

#### **CHAPTER V BIOMATERIALS, MEDICINE, BIOTECHNOLOGIES AND PHARMACEUTICS**

<b>FOOD DIVERSIFICATION LEVELS AND NUTRIENTS IN TUBERCULOSIS PATIENTS WITH AND WITHOUT DIABETES MELLITUS</b> .....	290
<i>Yumei Guo, Qiuzhen Wang, Yufeng Liu, Aiguo Ma, Yanxu Zhao, Yue Zou, Limei Sun, Hong Tian, Guofeng Jiang, Ruihan Lin, Yin Wang, Xiaojuan Dou</i>	
<b>ANTI-HEPATOCARCINOMA EFFECTS OF RESVERATROL LOADED SOLID NANODISPERSION BY A NEW MATERIAL NANO SILICA</b> .....	297
<i>Xiang-Ping Meng, Yi-Fei Wang, Zhi-Ping Wang</i>	
<b>EFFECT OF CORTEX LYCII RADICIS ETHANOL-EXTRACT ON THE HYPOGLYCEMIC AND HYPOLIPIDEMIC IN TYPE 2 DIABETIC RATS</b> .....	303
<i>Changlei Li, Xiji Shu, Xiaoqing Chen, Yuwei Liu, Huiling Yi, Wei Liu, Baomiao Ma</i>	
<b>STUDY ON POLYGONUM CUSPIDATUM COMBINED WITH AEROBIC EXERCISE TREATING DYSLIPIDEMIA</b> .....	308
<i>Li Liu</i>	
<b>STUDY OF JUJUBE POLYSACCHARIDES ON PROTECTION FROM LIPID PEROXIDATION DAMAGE OF CARDIAC MUSCLE TISSUE AFTER EXERCISE</b> .....	312
<i>Li Liu</i>	

<b>STUDY ON HEALTH EDUCATION AND HEALTH KNOWLEDGE OF FEMALE COLLEGE STUDENTS</b> .....	316
<i>Haina Cui, Tingting Xie</i>	
<b>IN VITRO AND IN VIVO ANTITUMOR EFFICACY OF BERBERINE-SOLID LIPID NANOPARTICLES AGAINST H22 TUMOR</b> .....	320
<i>Xiang-Ping Meng, Yi-Fei Wang, Zhi-Ping Wang</i>	

## **CHAPTER VI MANAGEMENT, ECONOMICS, LOGISTICS AND ENGINEERING MANAGEMENT**

<b>RESEARCH ON CAPITAL COST ANALYSIS OF STATE OWNED ENTERPRISES IN CHINA</b> .....	326
<i>Pei Wang</i>	
<b>TENDER EVALUATION METHOD ABOUT BIDDING OF CONSTRUCTION BASED ON SET PAIR ANALYSIS</b> .....	331
<i>Jing Wang, Wei Su</i>	
<b>RESEARCH ON THE PROFIT MODEL OF THE ASSET-LIGHT OPERATION DRIVEN BY FINANCIAL STRATEGY</b> .....	335
<i>Shao-Yan Zhou</i>	
<b>ANALYSIS ON THE FACTORS INFLUENCING THE VALIDITY OF QUALITY TALENTS EVALUATION</b> .....	340
<i>Lan Lan</i>	
<b>DEVELOPMENT RESEARCH ON INTERNET CULTURAL INDUSTRY IN HEBEI PROVINCE UNDER THE NETWORK TECHNOLOGY</b> .....	345
<i>Xuguang Yang</i>	
<b>FIELD OBSERVATION RESEARCH ON 3207 LARGE MINING HEIGHT FACES RIB SPALLING IN HUOERXINHE COALMINE</b> .....	350
<i>Qiao Wei</i>	
<b>RESEARCH ON FINANCING COMPLEXITY OF SMALL AND MICRO ENTERPRISES BASED ON AMARTYA SEN ENTITLEMENT CONCEPTION</b> .....	354
<i>Jian-Ying Lou</i>	
<b>RESEARCH PROGRESS AND PROSPECT OF CBM CASCADE UTILIZATION TECHNOLOGY IN CHINA</b> .....	359
<i>Weifeng Zou</i>	
<b>THE PREDICTING MODEL OF URBAN RESIDENTS PENSION INCOME AND EXPENDITURE BASED ON MULTIPLE LINEAR REGRESSION</b> .....	363
<i>Yuanjing Liu, Xiaotao Shi, Jiatai Gang</i>	
<b>STUDY AND ANALYSIS ON THE RECRUITMENT AND TRAINING MODES OF CIVIL HELICOPTER RESCUERS</b> .....	369
<i>Weiwei Zhu, Ting Sun, Hao Wang, Rui Yang</i>	
<b>INFORMATION RETRIEVAL SYSTEM BASED ON CONTEXT-AWARE IN INTERNET OF THINGS</b> .....	374
<i>Junhong Ma</i>	

## **CHAPTER VII ENVIRONMENTAL ENGINEERING AND RESOURCE DEVELOPMENT**

<b>RESEARCH ON LIMIT ANALYSIS FINITE ELEMENT METHOD FOR LOESS SLOPE AND APPLICATION</b> .....	379
<i>Yajun Jia, Cunli Chen, Baocheng Hu, Huyuan Zhang, Li Ma</i>	
<b>NUMERICAL SIMULATION OF THE INFLUENCE OF STEEP COAL SEAM MINING TO ROOF FAULT ACTIVATION</b> .....	383
<i>Mingdong Zhao, Zilong Guan, Donglin Dong</i>	
<b>RESEARCH ON GEOTECHNICAL ENGINEERING TECHNIQUE INNOVATION METHOD IN LOESS REGION</b> .....	389
<i>Yajun Jia, Cunli Chen, Huyuan Zhang, Naijun Liu</i>	
<b>3-D POSTSTACK MIGRATION USING THE ADJOINT OPERATOR OF MODELING</b> .....	393
<i>Qiqiang Yang</i>	

## **CHAPTER VIII NEW TECHNOLOGIES IN ENGINEERING EDUCATION AND TEACHING**

<b>SITUATIONAL RECONSTRUCTION OF C PROGRAMMING TECHNOLOGY BASED ON THE SYSTEMATIC WORK PROCESS FOR POLYTECHNIC .....</b>	<b>397</b>
<i>Wuxue Jiang, Jingjing Bao, Libin Gao, Shufei Li</i>	
<b>REFORM OF COMPUTER CURRICULAR IN UNIVERSITY OF POLITICAL SCIENCE - EXAMPLE OF EAST CHINA UNIVERSITY OF POLITICAL SCIENCE AND LAW .....</b>	<b>403</b>
<i>Meijing Shan</i>	
<b>COLLEGE ENGLISH TEACHING IN SOCIAL NETWORKING SERVICES BASED ON SIX DEGREES OF SEPARATION .....</b>	<b>408</b>
<i>Xiangju Chai</i>	
<b>TALENTS CULTIVATION MODE OF INTEGRATED INNOVATION FOR INFORMATION TECHNOLOGY AND LAW .....</b>	<b>412</b>
<i>Meijing Shan</i>	
<b>RESEARCH ON EDUCATION MANAGEMENT INFORMATION SYSTEM BASED ON CLOUD COMPUTING .....</b>	<b>416</b>
<i>Min-Hua Xu, Feng Ye, Xiao-Guo Liu</i>	
<b>THE APPLICATION AND INNOVATION RESEARCH ON MATHEMATICS EDUCATION TECHNOLOGY .....</b>	<b>420</b>
<i>Li Zhu, Yong Hong Fan, Ying Liu</i>	
<b>APPLICATION OF WEB TECHNOLOGY IN TEACHING ADMINISTRATION OF UNIVERSITY .....</b>	<b>424</b>
<i>Min-Hua Xu, Xiao-Guo Liu</i>	
<b>RESEARCH ON THE APPLICATION OF MODERN EDUCATIONAL TECHNOLOGY IN MATHEMATICAL EDUCATION IN HIGH SCHOOL .....</b>	<b>428</b>
<i>Ying Liu, Na Li, Jian Dong Zhao</i>	
<b>RESEARCH ON THE PERSON-JOB MATCHING OF VOCATIONAL COLLEGE STUDENTS BASED ON JAVA .....</b>	<b>432</b>
<i>Hong Shi, Shouqiang Sun</i>	
<b>Author Index</b>	