

# **7th International Conference on Manufacturing Science and Engineering (ICMSE 2017)**

Advances in Engineering Research Volume 128

Zhuhai, China  
11 – 12 March 2017

**Editor:**

**Z.Y. Jiang**

ISBN: 978-1-5108-3976-2

**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.**

Copyright© (2017) by Atlantis Press  
All rights reserved.  
<http://www.atlantis-press.com/php/pub.php?publication=icmse-17>

Printed by Curran Associates, Inc. (2017)

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

## SENSORS, INSTRUMENT AND INFORMATION TECHNOLOGY

<b>ANALYSIS AND IMPROVEMENT OF IDENTIFICATION METHOD FOR CRITICAL UNIT IN TRANSIENT PROCESS OF MULTI-GENERATOR POWER SYSTEM</b> .....	1
<i>Wenyong Li, Hongsheng Su</i>	
<b>MAPPING OF UML DIAGRAMS TO EXECUTABLE CODE</b> .....	9
<i>Shugang Liu, Jinfeng Chen, Yifei Liu, Pengrui Lv</i>	
<b>DATACENTER NETWORK BASED ON MICRO-ELECTRO-MECHANICAL SYSTEM OPTICAL SWITCHING</b> .....	17
<i>Weicheng Jiang, Lanying Li, Yong Li, Weishu Guo</i>	
<b>A PRACTICAL 3D MEASURING SYSTEM OF PARTS BASED ON LASER SENSOR</b> .....	22
<i>Shengfeng Fang, Caihong Su, Zhiye Pan</i>	
<b>EVALUATION MODEL OF EQUIPMENT'S OPERATIONAL READINESS BASED ON ENTROPY WEIGHT METHOD AND VIKOR METHOD</b> .....	28
<i>Xinpeng Wang</i>	
<b>REVIEW AND PROSPECT OF UNDERWATER TARGET FEATURE EXTRACTION BASED ON ACTIVE SONAR</b> .....	34
<i>Zhong Wang, Wei Feng, Xinpeng Wang</i>	
<b>THE DESIGN AND IMPLEMENTATION OF MOUNT LU 3D VIRTUAL TOURISM SYSTEM</b> .....	38
<i>Wei Yue, Chaoyang Fang</i>	
<b>STUDY ON MULTI-PULSE LASER DETECTION OF MOVING TARGET UNDER LOW SNR</b> .....	42
<i>Junling Sun, Dongdong Pang, Guangmin Sun, Pengge Ma</i>	
<b>EXPLORATION AND PRACTICE OF DATA MINING COURSE TEACHING ORIENTED BIG DATA</b> .....	47
<i>Lei Gang, Xiong Chen</i>	
<b>DESIGN OF AQUATIC ECOLOGICAL SECURITY EVALUATION SYSTEM BASED ON VIRTUAL GEOGRAPHIC ENVIRONMENT</b> .....	51
<i>Zengzheng Wang, Chaoyang Fang, Yeqiao Wang</i>	
<b>STUDY ON TIME SYNCHRONIZATION OF MARINE FAULT RECORDING DEVICE BASED ON LAGRANGE ONCE INTERPOLATION ALGORITHM</b> .....	55
<i>Leiming Huang, Liming Wang, Zhongqin Chen</i>	
<b>APPLICATION OF PID NEURAL NETWORK IN THE PNEUMATIC CONTROL SYSTEM</b> .....	60
<i>Yuxuan Pan, Quanlin Dong</i>	
<b>GROUND FISSURE MONITORING BASED ON 3D TERRESTRIAL LASER SCANNING TECHNIQUES</b> .....	67
<i>Lichun Sui, Haixiong Zhu, Chengxi Fang, Shuo Zhai</i>	
<b>FILTERING OF LIDAR POINT CLOUD DATA BASED ON NEW TIN ALGORITHM</b> .....	72
<i>Lichun Sui, Jianfeng Zhu, Haixiong Zhu, Mianqing Zhong</i>	
<b>ANALYSIS ON THE DEVELOPMENT COUNTERMEASURES OF CHINA'S SPORTS TELEVISION MEDIA IN THE OMNI MEDIA ERA</b> .....	77
<i>Tan Kang</i>	
<b>CURRENT SITUATION ANALYSIS OF SPORTS TELEVISION BROADCASTING IN CHINA</b> .....	82
<i>Kang Tan</i>	
<b>DEVELOPMENT STAGE EXPLORATION OF SPORTS TELEVISION BROADCASTING IN CHINA</b> .....	87
<i>Kang Tan</i>	
<b>A TREND MODEL OF INTERNET PUBLIC OPINION</b> .....	92
<i>Qing Lu</i>	

## MANUFACTURING SCIENCE AND ENGINEERING MANAGEMENT

<b>THE NATURE OF MANAGEMENT</b> .....	96
<i>Jing Fu, Jin Pu</i>	
<b>ROBUST OPTIMIZATION ON THE FOURTH PARTY LOGISTICS NETWORK WITH PURCHASE – RETURN REVERSE LOGISTICS</b> .....	99
<i>Haifeng Guo</i>	

<b>RESEARCH ON BUILDING FACADE POINT CLOUD DATA BASED ON RANDOM SAMPLING ALGORITHM SEGMENTATION</b> .....	105
<i>Peng Cang, Zhenglin Yu</i>	
<b>OPTIMIZATION METHOD OF HEATING FURNACE FOR STIRLING ENGINE HEATED BY NATURAL GAS</b> .....	110
<i>Bo Peng, Junwei Tian, Qin Wang, Yu Su, Zhiqiang Lei</i>	
<b>QUANTITATIVE ANALYSIS OF INCLUSIONS IN DUCTILE IRON BY ELECTROLYTIC EXTRACTION</b> .....	115
<i>Fei Yuan, Xing Qi, Yitao Yang</i>	
<b>THE PROCESSING INSTANCE OF A FLAT BLIND CAVITY INSERT OF DIE-CASTING MOULD</b> .....	120
<i>Shuai Wang, Xueqing Zhao</i>	
<b>TEST OF SHEAR MECHANICAL PROPERTIES OF CASSAVA STALKS</b> .....	124
<i>Tao Wang, Mei Yan, Menglin Li</i>	
<b>RESEARCH ON PRODUCTION CAPACITY OF MANUFACTURING ENTERPRISES BASED ON SYSTEM DYNAMICS</b> .....	139
<i>Wei Qian, Chuankai Jiang</i>	
<b>FREEZE-THAW DAMAGE ANALYSIS OF CONCRETE MATERIAL FOR CHANNEL LINING STRUCTURE</b> .....	146
<i>Yaqi Gong, Zhiqiang Xie, Qin Chen</i>	
<b>APPLICATION OF DUAL DSP TARGET TRACKING SYSTEM BASED ON SVM</b> .....	151
<i>Xinghong Li, Qian Xiang, Jinfa Cheng</i>	
<b>FILE SYSTEM WRITE-OPTIMIZATION ON HIGH-PERFORMANCE COMPUTING SUPPORT PLATFORM</b> .....	156
<i>Jiye Wang, Nan Zeng, Jun Yu</i>	
<b>THE HUMAN RELIABILITY RESEARCH OF VDT OPERATION BASED ON TASK CHARACTERISTICS AND OPERATOR FAMILIARITY</b> .....	160
<i>Junhao Luo, Bin Liao, Kailun Yue, Huimin Teng</i>	
<b>THE CALCULATION METHOD OF ONE-DIMENSIONAL MAGNETO RHEOLOGICAL ELASTOMER PROBLEM</b> .....	165
<i>Zhenguo Tian, Jinkui Liang</i>	
<b>STUDY ON THERMAL CURING MOTIVATING VOLCANIC ACTIVITY OF RICH-SILICON IOTP</b> .....	172
<i>Zhigang Zhu, Shunkai Li, Beixing Li</i>	
<b>IDENTIFICATION OF KEY PATCHES FOR BIODIVERSITY CONSERVATION BASED ON POSSIBILITY OF CONNECTIVITY METHOD</b> .....	180
<i>Yue Zhang, Bo Song, Zaiqiang Liu, Fan Zhang</i>	
<b>DESIGN AND ANALYSIS ON ELECTRIC PERFORMANCE OF THREADED ADHESIVE JOINTS OF COMPOSITE AXIAL INSULATION BREAK</b> .....	184
<i>Changchun Yang</i>	
<b>STUDY ON CUSTOMER SATISFACTION OF ELECTRIC VEHICLE PRODUCT QUALITY CHARACTERISTIC</b> .....	188
<i>Jun Ma, Tianjiao Li, Zaiyan Gong</i>	
<b>PRODUCTION AND QUALITY CONTROL OF CLEAN STEEL IN ANSTEEL</b> .....	200
<i>Yali Liao, Yufeng Yao</i>	
<b>MECHANICAL CUTTING TECHNIQUE OF THE STEEL TOWER SEGMENTS OF LONG-SPAN CABLE-SUPPORTED BRIDGE</b> .....	204
<i>Hui Wang, Qinglei Zhang, Shiqin He, Fei Yan</i>	
<b>DESIGN AND TESTING OF A VERTICAL SCROLL PUMP EFFICIENCY</b> .....	208
<i>Pokanit Jeerawat, Kritmaitree Assist. Prof. Pollakrit</i>	
<b>SYNTHESIS OF NANO TiO<sub>2</sub>-Fe<sub>2</sub>O<sub>3</sub> PHOTOCATALYST AND PHOTOCATALYTIC DEGRADATION PROPERTIES ON OXYTETRACYCLINE HYDROCHLORIDE</b> .....	216
<i>Ying Yang, Qian Zhang, Yuhang Deng, Chuanda Zhu, Di Wang, Zhenquan Li</i>	
<b>RESEARCH ON ALGORITHM OF RENTING EXTENICS STRATEGY GENERATING SYSTEM</b> .....	220
<i>Jianxin Li</i>	
<b>RESEARCH ON THE KEY TECHNOLOGY OF 8000MM DIAMETER MARINE TRACKING DOME</b> .....	224
<i>Libao Yang, Yanhong Li, Jing Wang, Yan Wang, Guoquan Shi</i>	
<b>DEFORMATION ANALYSIS FOR THE SUPERCONDUCTOR-SILVER INTERFACE IN THE BI-2223/AG TAPE ROLLING PROCESS</b> .....	233
<i>Yongjin Lu</i>	

<b>ANALYSIS ON MULTI-DIRECTION FORGING DEFECTS OF RAILWAY CLAMP BASED ON CERTAIN KIND OF PREFORMED BILLET</b> .....	241
<i>Liyang Liu, Hongxia Yuan, Changbin Shao</i>	
<b>SYNTHESIS AND CRYSTAL STRUCTURES OF A MIXED-METAL COMPLEX WITH NITRILOTRIACETAMIDES</b> .....	245
<i>Guichun Sun, Jingwen Ran</i>	
<b>RESEARCH OF THE SHAPE OF PRESSURE ARCH IN LAYERED ROCK MASS BASED ON THE PROTODYAKONOV'S THEORY</b> .....	250
<i>Xin Wu, Zihan Tu</i>	
<b>STATUS OF 3D PRINTING TECHNOLOGY FOR METAL MATERIALS</b> .....	256
<i>Jinjian Lv, Changzhi Jia, Jianchun Yang, Yufei Zhang</i>	
<b>FATIGUE LIFE PREDICTION AND STRUCTURAL OPTIMIZATION ON TORSION SHAFT OF TRACKED VEHICLE</b> .....	260
<i>Sihong Yan, Fenghe Tao, Changzhi Jia, Guangsheng Liu</i>	
<b>RESEARCH ON PRODUCT QUALITY OPTIMIZATION OF H STEEL BASED ON QFD AND FMEA --A CASE STUDY OF LAIWU STEEL GROUP</b> .....	265
<i>Wanli Ma, Mengzhi Wang, Ningning Wu</i>	
<b>PREPARATION AND ELECTROCATALYTIC OXIDATION CHARACTERISTICS OF ETHANOL ON Pd/C CATALYST</b> .....	269
<i>Aixia Ling, Zhiqiang Xu, Jiongchen Shan, Jing Liu, Fandong Kong</i>	
<b>RESEARCH ON THE APPLICATION OF INFORMATION ENTROPY IN EXPERIENCE DESIGN</b> .....	273
<i>Haiyan Cao</i>	
<b>THE INHERENT CHARACTERISTICS AND VIBRATION RESPONSE ANALYSIS OF 10KW SMALL WIND TURBINE TOWER</b> .....	278
<i>Yongzhi Xie, Lieping Zhang</i>	
<b>REVIEW OF DISTORTION FUNCTION DESIGN IN SPATIAL DOMAIN</b> .....	283
<i>Jun Li</i>	
<b>THE DYNAMICS ANALYSIS OF AUTOMOBILE CHASSIS FOR SHELTER</b> .....	288
<i>Duan Xi, Youyong Ding, Yangyang Hu</i>	
<b>ADSORPTION OF GLYPHOSATE FROM AQUEOUS SOLUTION ONTO SURFACTANT-MODIFIED RESIN</b> .....	293
<i>Changyin Zhou, Dongmei Jia, Xinmin Liu</i>	
<b>DESIGN OF NEW THERMAL LUNCHBOX BASED ON HUMANIZATION DESIGN</b> .....	297
<i>Xinxin Lü, Jia Luo</i>	
<b>ANALYSIS OF ELECTROMAGNETIC SHIELDING STABILITY IN ELECTRONICS SHELTER</b> .....	301
<i>Hea Ting, Duan Xi</i>	
<b>SIMULATION STUDY AND INFLUENCING FACTORS ANALYSIS OF MINI - CAR PLATFORM TILTING TEST</b> .....	307
<i>Changye Liu, Yimin Mo, Yong Wei, Zhigui Lin</i>	
<b>DEFORMATION RESEARCH OF TITANIUM ALLOY DIAPHRAGM DISC WITH DIFFERENT CUTTING EDGE RADIUS</b> .....	315
<i>Aiqin Lin</i>	
<b>RESEARCH OF TITANIUM DIAPHRAGM DISC CLAMPING WAY</b> .....	319
<i>Aiqin Lin</i>	

## **MECHATRONICS AND CONTROL ENGINEERING**

<b>IMPROVEMENT RESEARCH OF THE SOFTWARE OF TRANSFORMING SEMI-STRUCTURED HTML FILE INTO STRUCTURED TEXT FILE</b> .....	323
<i>Qiming Cui, Xue Wang, Guodong Chen, Yongbin Zhao, Bo Li, Yi Ning, Shuting Cui, Zirong Zhang, Rui Zhao, Hongyu Meng, Yao Zhang, Zhenqiang Fu</i>	
<b>RESEARCH ON CONFIDENCE MACHINE</b> .....	328
<i>Fangchun Jiang</i>	
<b>STUDY ON THE EFFECT OF TEMPERATURE ON WEIGH-IN-MOTION ACCURACY OF PIEZOELECTRIC THIN</b> .....	332
<i>Hao Tang, Min Duan</i>	
<b>SPARSE RECOVERY-BASED MULTI-STATIC RADAR MULTI-TARGET PROJECTION LOCALIZATION</b> .....	337
<i>Ling Fan</i>	

<b>RESEARCH ON THE CONTROL OF FUEL REGULATOR OVERTHOOT BASED ON LINEAR ULTRASONIC MOTOR</b> .....	342
<i>Gan Tian, Yin Li, Huipeng Yan, Zhengwei Yang, Wei Zhang</i>	
<b>ACTIVE DESIGN METHODOLOGY OF POSITIONING PRECISION OF MACHINE TOOLS</b> .....	350
<i>Yanwei Xu, Tancheng Xie</i>	
<b>A HILBERT TYPE INEQUALITY FOR FINITE SERIES</b> .....	355
<i>Baoju Sun</i>	
<b>ON A MULTIPLE HILBERT TYPE INTEGRAL INEQUALITY WITH THE HOMOGENEOUS KERNEL OF 0-DEGREE</b> .....	359
<i>Baoju Sun</i>	
<b>THE HUMAN ERROR RESEARCH OF HUMAN-COMPUTER INTERACTION VDT CONTINUOUS OPERATING BASED ON EXPERIMENT</b> .....	363
<i>Huimin Teng, Bin Liao, Junhao Luo, Kailun Yue</i>	
<b>RESEARCH AND EXPERIMENT ABOUT SUPPRESSION OF INTER SYMBOL INTERFERENCE IN THE TRANSIENT DETECTION THEORY</b> .....	368
<i>Zhi Li, Bingyu Li</i>	
<b>RESEARCH ON ICFD DEEP TEST TECHNOLOGY BASED ON LABVIEW APPLIED TO NUCLEAR POWER STATION CIRCUIT BOARD</b> .....	372
<i>Liangcai Qi, Jishi Guan, Xincan Chang</i>	
<b>RESEARCH ON PERFORMANCE TEST OF GENERATOR EXCITATION SYSTEM</b> .....	375
<i>Xiaohui Shen, Yanxun Wei</i>	
<b>DESIGN AND IMPLEMENTATION OF MULTI-PARAMETER INTELLIGENT MONITORING SYSTEM FOR MARINE RANCHING</b> .....	379
<i>Fabin Li, Yao Shi, Hui Li, Yafei Yang, Pengxiang Li</i>	
<b>MONITORING OF WATER EXTENT AND VARIATION OF THE POYANG LAKE USING GF-1 REMOTE SENSING DATA</b> .....	384
<i>Yu Zhou, Li Zhang, Yeqiao Wang</i>	
<b>AN EMPIRICAL STUDY: CDA-BASED DATA INNOVATION-DRIVEN INTELLIGENT TRAFFIC CONTROL SYSTEM MODEL OF CANTON CITY</b> .....	388
<i>Luxia Yi, Yucong Yo</i>	
<b>MEASUREMENT METHOD FOR NON-CIRCULAR PISTON BASED ON LASER DISPLACEMENT SENSOR</b> .....	392
<i>Yanwei Xu, Tancheng Xie, Junpeng Wang, Menghui Chen</i>	
<b>DESIGN OF MEASURE-CONTROL SYSTEM FOR A NEW TYPE INTELLIGENT ENGINE INTERCOOLER</b> .....	397
<i>Hua Zhou, Xiaojun Jing, Zenghui Yin</i>	
<b>CLASSROOM SEARCHING SYSTEM BASED ON SMART MOBILE PHONE</b> .....	401
<i>Dian Gu, Dongsong Yan, Jiachun Cai, Yijia Zheng, Shuangrui Shi, Luyang Liu</i>	
<b>STUDY ON INDUCED-INCREASING TRAFFIC DURING HIGHWAY RECONSTRUCTION AND EXTENSION</b> .....	406
<i>Xuanyu Ye, Houxuan Wu</i>	
<b>FAULT DETECTION METHODS IN AIR-CONDITIONING SYSTEM BASED ON PARAMETRIC STATISTICS CHARACTERISTICS</b> .....	412
<i>Yuan Liu, Pengcheng Zhao, Wei Li, Xiaozuo Lu, Yimin Wang</i>	
<b>A STUDY ON INTELLIGENT INDUSTRIAL EQUIPMENT REPAIR SYSTEM</b> .....	420
<i>Yunxiang Liu, Wenbin Yao</i>	
<b>STUDY ON UNDERWATER HYPERBARIC DRY GMAW WELDING</b> .....	425
<i>Deyu Tang, Huli Niu, Long Xue, Bo Sun, Tao Lv, Zongtao Fang</i>	
<b>RESEARCH AND APPLICATION OF IMPROVED HOUGH-ICP ALGORITHM</b> .....	433
<i>Yan Su</i>	
<b>EXPERIMENTAL INVESTIGATION ON VIBRATION CHARACTERISTICS IN THERMOSONICS DETECTION TEST</b> .....	441
<i>Gan Tian, Yin Li, Zhengwei Yang, Yong Jia, Anbo Ming, Wei Zhang</i>	
<b>PHOTONIC CRYSTAL FIBER MICRO PRESSURE SENSOR BASED ON AN EXTRINSIC FABRY-PEROT INTERFEROMETER FABRICATED BY FEMTOSECOND LASER</b> .....	445
<i>Peng Wang, Liuchao Zhang, Feifei Chen, Zhitao Cao</i>	
<b>CURRENT PATENT TRENDS ANALYSIS AND RESEARCH FOR INTELLIGENT INDUSTRIAL ROBOTS INDUSTRY —BASED ON DEBURRING ROBOT</b> .....	451
<i>Shunjun Zhu, Jinsong Chen, Jing Li, Xuexi Zhang, Zhiwen Huang</i>	
<b>Author Index</b>	