2016 Eighth International Conference on Measuring Technology and Mechatronics Automation (ICMTMA 2016)

Macau, China 11-12 March 2016



IEEE Catalog Number:

CFP1613G-POD **ISBN:** 978-1-5090-2313-4

Copyright © 2016 by the Institute of Electrical and Electronics Engineers, Inc All Rights Reserved

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

***This publication is a representation of what appears in the IEEE Digital Libraries. Some format issues inherent in the e-media version may also appear in this print version.

 IEEE Catalog Number:
 CFP1613G-POD

 ISBN (Print-On-Demand):
 978-1-5090-2313-4

 ISBN (Online):
 978-1-5090-2312-7

ISSN: 2157-1473

Additional Copies of This Publication Are Available From:

Curran Associates, Inc 57 Morehouse Lane Red Hook, NY 12571 USA Phone: (845) 758-0400

Phone: (845) 758-0400 Fax: (845) 758-2633

E-mail: curran@proceedings.com Web: www.proceedings.com



2016 Eighth International Conference on Measuring Technology and Mechatronics Automation

ICMTMA 2016

Table of Contents

Preface	xxi
Conference Organization	xxii
Program Committee	xxiii
Reviewers	xxiv
ICMTMA 2016	
3D Reconstructions Analysis of the Early Development of the Dentition	1
A Comparison of Different Forms of Small Overlap Tests	4
A Control Method for Work State of Hybrid Vehicle Driving System Based on Fuzzy Neural Network	8
A High Efficient Music Retrieval Algorithm Based on Content	12
A Modifed Approach on MMSE MIMO Interference Cancellation Detection	16
A New Monitoring System of Portable Microcomputer Injection Pumps Based on Z-Wave	19
Gong Jiang Tao, Tan Chuan Wu, Liu Li Jun, and Zhou Ling	
A Point Cloud Model Based Image Relief Effect Design Han Minghui	22
A Review of Port Governance in Ghana Tetteh Evans Ago, Hualong Yang, and Tofoatsi D. Enam	26

A Study of Applying BIM Technique into Fire Disaster Investigation System Lee-Kuo Lin, Yu-Huai Hsu, and Yu-Chen Hsiao	32
A Study on Chest Soft Tissue Injury Risk in Vehicle to Pedestrian Collisions	36
Yong Han, Shuozhen Fu, Zhiyong Yin, and Liangliang Shi	
A Study on the Effect of Age on the Injury Criteria and Modeling of Lower Extremity Long Bone	40
Jing Huang and Yongcheng Long	
A Study on the Impact between Car to Circular Concrete Pole	46
A Study on the Modern Network Technology and the Classroom-Based	
Evaluation System of ELT in Higher Vocational College	51
A Study on the Strength of CNG Cylinders Frame in a New Energy Coach	55
A Virtual Binocular Vision System and Its Application in Information Logistic	59
Accounting Safety System in E-Commerce and Its Application	63
Aesthetic Education of Teenagers under the Background of Digital Media	67
AIS 3+ Thoracic Injuries Among Drivers in Real-World Motor Vehicle Frontal	
Crashes: The Effect of Impact Direction, Impact Location and Status of Seat Belt	71
Peiyu Li, Chunsheng Ma, Yuzhe Dong, Hao Li, and Jinhuan Zhang	
An Analysis of Road Segment Traffic Safety Based on Accident	
Reconstruction	77
Yonggang Zhang and Tiefang Zou	
An Evaluation Model of Financing Risk for Large-Scale Water Conservancy Construction Project	01
Wangshu Su and Wang Zhang	01
An Improved Fast Self-Comparison Algorithm for High-Speed Defect Detection	
of ITO Circuits	85
Jiang Changcheng, Quan Yanming, Lin Xingui, and Xing Zehui	
An Integrated Frequency Lowering Algorithm for Sensorineural Hearing Impairment	89
Wang Xia, Jiang Hao, Liang Ruiyu, Wang Qingyun, Zhao Li, and Zou Cairong	
Analyzing Avionics Electronic Maintenance Capacity Based on Random	
Strategy	93
Shuguang Lei and Wenpan Li	

Anti-rear-End Collision Safe Running and Its Warning of Vehicle on Highway	97
Application and Research Development with Touch Point and Non-touch Point of Shirt Design Efficacy	102
Qian Xiaonong, Zhang Ning, Wang Weizhen, Zhang Shaoke, Gao Ce, and Zheng Boge	
Application of Flipped Classroom in Medical Oral English Teaching	105
Application of Green Architecture Theory to Interactive Experiment Teaching of Landscape Architectural Design	109
Application of Vibrating Wire Sensor in the Monitoring of Cable-Net Construction Stage for FAST	114
Application Research on Latent Semantic Analysis for Information Retrieval Chen Wenli	118
Application Study of Modern Educational Technology under Cloud Computing Platform	122
Big Data Era Influence on College Students' Ideological and Political Education and Innovation Strategy	126
C/S Architecture Based Design on Financial Information System	129
Cloud Teaching Environment as a Solution to Teaching of English for Specific Purposes in Big Data Era	132
Collaborative MAC Protocol Based on Vehicle Ad-Hoc Network	136
Commercial Housing Sales Forecasting Model Based on Grey System	140
Communications Professional Teaching Equipment Research and Development of Virtual Simulation	144
Comparison of Classroom Etiquette in Chinese and American Universities	147
Comprehensive Analysis Method Model of Aerobics Performance Based on Artificial Intelligence	151

Computer Network Security and Defense Technology Research	155
Computer Software Development Based on Hierarchical Technology	158
Construction and International Popularization of Digital Platform for Chinese Traditional Furniture Culture	162
Construction of Micro-Course Module Based on Moodle Platform	167
Cultural Tourism Resource Development Evaluation Research Based on Analytic Hierarchy Process	171
Data Security and Encryption Technology Research on Smart Grid Communication System Wenhao Zhu and Qiyi Guo	175
Dental Tissue Engineering of EMPs on Human Dental Pulp Stem Cells	179
Design and Implement of Share Data Center in Digital Asian-Pacific Region	182
Design and Implementation of 3D Virtual Digital Campus - Based on Unity3D	187
Design and Implementation of an Expandable SSTP System for Educational Administration	191
Design and Implementation of the Management Information System for Chain Business Corporation	195
Design and Implementation of Vertical Search Engine Based on Hadoop	199
Design of .Net Courseware on Demand System	206
Design of Lijiang Water Environment Monitoring System Based on WSN	210
Determination of C-Reactive Protein Concentration in Serum Based on Chemiluminescence Analysis	214
Development and Application of Micro Teaching - A Case Study of the Construction of Micro Teaching Mode in Landscape Architecture	218

Different Immobilized Method of CRL to Influence on Chiral Resolution of Racemic Paroxol	223
Yan Liu, Yin Feng, and Jing-Xi Ma	
Digital Education Resource Configuration Mode Transformation - From the Co-construction and Sharing to the Public to be Shared	227
Dry Ports Development in East Africa - A Benchmarking Approach	231
Dynamic Response and Injury of Neck Tissues in Low-Speed Rear-Ending	240
Ecological Tourism Bearing Capacity Assessment Based on Analytic Hierarchy Process	245
Zhang Fang-Rui and Suo Hong	
Effect of Anisotropic Interface Kinetics on the Interface Morphology of Spherical Crystal	249
Bai Xueke, Chen Mingwen, and Wang Zidong	
Effect of Contact Friction between Seatbelt and Human Body Model on Simulation of Rib Fracture in Frontal Impact	255
Effect of Total Flavonoid and Total Polyphenol from Tartary Buckwheat Sprouts and Their Inhibitor Activities on a-Glycosidase	258
Effects of Iodine and Light Intensity on Micropropagation of Purple Coneflower (Echinacea Purpurea (L.) Moench)	262
Chen Xiaolu, Li Dongliang, Yang Yuesheng, and Wu Hong	000
Embedded Speech Recognition System Design and Optimization	200
Estimation Study of Stress Concentration Factor of Crack Structure Based on BP Neural Networks	270
Zhu Lin, Jia Minping, Shi Guanglin, and Shen Yanyou	270
Evaluation Model of Corporate Financial Impact Factor Based on Discrete Neural Network	274
Xiaoying Fan	
Evaluation of Man-Machine System for Workover Rigs Based on Grey Analytical Hierarchy Process	278
Xu Jianbo, Yu Suihuai, and Fan Wen	
Experiment Simulation of Seat Belt and ISOFIX Anchorage for a Commercial Vehicle	282
Tang Youming, Lv Na, Xue Qing, Wang Ting, and Tan Weifeng	

Experimental Center Construction of Teaching Management Platform	
under the Background of Digital Campus	286
Run Zhu, Yiming Chen, and Chenxi Zhuang	
Exploration and Application of Micro-Lecture Platform in Modern Design	
Teaching	290
Zhan Lei and Feng Ya	
Exploration and Practice of Virtual Class for Furniture Production Professionals	204
Wei Xu, Shuopei Zhang, Zhihui Wu, Shulan Yu, and Wei Wang	294
Exploration into Teaching Construction of Infographic Design in the Context	
of Interaction	301
Qi Sun, Ruiqi Chen, and Ci Chen	
Factors Affecting Analysis of Herdsmen Income in the Sanjiangyuan	
Ecological Protection Zone	306
Huang-Min	
Finite Element Analysis on Thermal Effect of Power Lithium Ion Battery	0.40
for Electrical Vehicle	310
-	245
Formative Assessment in English for Specific Purposes	315
Government Information Management System Design Based on B/S Mode	310
Mi Lan	
Human 3D Garment Modeling Method Based on Surface Modeling	
Technology	323
Xu Jun	
Image Compressive Sensing via Multiple Constraints	327
Yutang Fu, Wei Feng, and Weiguo Peng	
Implementation of Content Analysis on Educational Technology Research	331
Zeng Xiangyan	
Improvement of "Flipped Classroom" Teaching Model Based on Fuzzy	
Comprehensive Evaluation Model	335
Influence of Aggressive Driving Behavior on Traffic Flow Character in Following Flow	330
Dan Yu, Yihu Wu, and Na Yang	559
Influence of Inertial Sensor Errors on GNSS/INS Integrated Navigation	
Performance	347
Fang Hui and Feng Qin	

Injury Analysis of a Six-Year-Old Child Pedestrian Thorax in Lateral/Oblique Impact	352
Lv Wenle, Ruan Shijie, Li Haiyan, Cui Shihai, He Lijuan, and Wang Chunxiang	
Intelligent Building Engineering Information Management System Design and Implementation	359
Intelligent Control and Energy Saving Technology Used in Trench Cutter	363
Interactive Medical English Teaching Model Research Based on Network Platform	367
Joint Motion Damage Rating Based on Support Vector Machine	371
Life Cycle Cost Analysis of Urban Rail Transit Vehicle	375
Magnetic Resonance Image Segmentation Algorithm Based on Fuzzy Clustering	379
Guohua Li	
Material Combinatorial Transportation Research in Emergency Supply Based on Genetic Algorithm	383
Hu Feihu, Wang Yulong, Chen Jinjin, and Zhao Muhua	
Measuring Safety for Urban Tunnel Entrance and Exit Based on Nanoscopic Driving Behaviors	386
Mobile Learning System Design and Implementation Based on JAVA	393
Modular Industrial Design Professional Talent Training Mode Based on the Characteristics of Intelligent Home - Take Industrial Design of Nanjing	
Forestry University as an Example	397
Morphological Investigation and Classification Research of 18 Bougainvillea	401
Multi-channel Thermal Infrared Image Edge Detection Method under Multi-core Environment	405
Xue Hongye and Gao Ruilin	
Multi-pose Face Detection Research Based on Adaboost	409

Network Cloud Storage Service Architecture Analysis and Research	413
On Designing Learning Platform of College English Multimedia Teaching Resources Based on Theory of Constructivism Li Jin-Ping	417
On the Impact Fracture Simulations of Automotive Laminated Glass	420
On-Board Exhaust Emission Measurements of Vehicles Using a Portable Emission Measure System	424
Online Detection Technique of 3D Defects for Steel Strips Based on Photometric Stereo	428
Optimization and Validation of PAB to the Front Row HIII 5th Percentile Female Occupant Restraints System Zhang Tengteng, Wang Dazhi, Liu Junyong, Zhuo Peng, Dong Zhonghui, Liu Lijia, and Zhuang Xiao	433
Optimization of Lipase-Catalyzed Asymmetric Synthesis of Ketoprofen in Non-Aqueous Media by Response Surface Methodology	441
Order-Oriented Cultivation & Teaching	445
Tourism Route Design and Optimization Based on Heuristic Algorithm	449
Parameter Optimization of Child Restraint System Based on Orthogonal Experiment	453
Parametric Design of Istributo Parts Based on Pro/E Redevelopment Technology Liu Xiao-Wen	457
Pedestrian Knee Joint Modeling and Viscoelastic Material Parameters Identification for Ligaments	461
Performance Analysis of a Moving Target Tracking Method Based on Computer Vision	467
Performance of the Flexible Means in EST Translation	471

Based on AHP	475
Nan Ren	
Progress of Research on Injury Biomechanical Model and Tests of Human Liver in Impact	479
Chen Jiqing, Du Tianya, Lan Fengchong, and Liu Chaoyang	
Realization and Simulation of Space Curve Weld Interpolation Algorithm	485
Research and Design of the New Network Computer Interlocking Simulation System	488
Hu Xiu	
Research and Implementation of the Positioning System for Coal Mining Staff Based on Random Forests	491
Liu Jing	
Research for Construction Process Monitoring System of Main Reflector System for FAST	495
Ming Zhu, Qiming Wang, Xiangtian Zhou, Xiaolin Wang, and Juze Li	
Research of Animation Shots Principle	499
Research on Area Control Method in Urban Signal Intersection under the Multi - agent System Dan Yu, Yihu Wu, and Na Yang	502
Research on Coordination Mechanism for Third Party Collecting Closed-Loop Supply Chain with Combined Contracts	510
Research on Core Curriculum Optimization of Material Forming and Control Engineering Specialty Based on Value Chain	515
Research on County Economic Structure and Optimal Layout of Weishan County, Yunnan Province Based on GIS Jiang Meiying, Zuo Jiachun, Niu Lede, and Xiong Liran	518
Research on Dynamic Test Method of Child Restraint System Based on FMVSS213 Standard	524
Li Shicheng, Liu Zhixin, Sun Hang, and Chen Chao	
Research on Flipped Classroom Design and Implication Based on Edmodo Platform	528
Hu Qingqing	

Research on Interaction Influence of Learners Factors for the Students'	E22
English Learning	533
Research on Lightweight Material of FrontalBumper for Midsize Coach	539
Research on the Design of Advanced Mathematics Course Examination and Evaluation System Based on Fuzzy Algorithm	544
Research on the Health Index of the Inductive Loop Wire in a Freeway Lane	548
Research on the Influence Factors of Volleyball Passing Technique Based on AHP	556
Chunjuan Ye and Yi Liu	
Research on the Innovation of CDIO Training Model for the Students Majored in Human Resource Management Based on Cloud Computing	560
Research on the Risk of Child Occupant Injury Based on Offset Impact	564
Research on the Security Problem in Windows 7 Operating System	568
Research on the Urban Construction Waste Recycling Network and Its Optimization	572
Xinyu Li	
Research Progress of Intelligent Dressing Booster Costume	576
Risk Assessment and Control for Accounting Information System Based on Fuzzy Analytic Hierarchy Process	580
Robust Topology Optimization under Loading Uncertainty with Proportional Topology Optimization Method	584
School and Enterprise Remote Interactive Visualization Approach in Environmental Art Design Teaching	589
Signal Integrity Analysis and Simulation of High-Speed Circuit	593
Simulation Method for Optical System of an Infrared Gas Sensor	597

Simulation on Relationship between APP Pre-loaded Cooperation Behavior in Domestic Smartphone Enterprises Based on Evolutionary Game Theory	601
Simulation on Vehicle Collision Accidents and Vehicle Safe Evaluation Based on Nais Platform	605
Simulation Research on Sensorless Speed Control System of Permanent Magnet Synchronous Motor Based on SMO	610
Chen Mingxia and Zhao Yuguang Social Media as Research Instrument for Urban Planning and Design Wu Wen and Wang Wei	614
Speech Signal Processing and Simulation Analysis Based on Compressed Sensing	617
Spontaneous Speech Emotion Recognition via Multiple Kernel Learning	621
Status and Development Trend of China Children's Film under Fuzzy Comprehensive Evaluation Model	624
Stock Market Forecasting Algorithm Based on Improved Neural Network	628
Strategy of Digital Education Resources Construction in Cloud-Computing Environment	632
Strength Analysis of Nozzle Opened in Cylinder in Thermal Environment	636
Study on Applying the Neural Network in Computer Network Security Assessment Zhou Lianbing	639
Study on Head Impact Injury Evaluation Index of Vehicle Interior Fittings	643
Study on the Application of Micro-Course in Professional Art Courses in Colleges	649
Wei Luo, Jun Peng, and Yangjing Zhou	
Study on the Distributed English Teaching Information System Design	652
Study on the Vulnerability of Environmental Ecosystem in the Loess Plateau Region Based on Factor Analysis	656

Study on Traffic Accident Investigation and Site Survey Evidence Based on Motor Vehicle Insurance	660
Swarm Oriented Data Organization and Model Analysis for Libraries Information Service	663
Teaching Analysis on the Advertising Design Course in the Context of "Micro-Blog Times"	667
The Advantage and Module Study for Introducing E-Books in Book Design Course	671
The Application and Control Optimization of Electronic Park Brake in the Park Assist	675
The Application of Career-Guiding MOOC Course in Undergraduate Colleges	681
The Application of Digital Electronics in Networking Communication	684
The Application of Digital Technology in Interior Design Education	688
The Application of Digital Technology in the Design of Landscape Architecture and Education Reform	692
The Application of Information Visualization Design in Teaching Field	696
The Application of Mobile Internet in Teaching and Learning Development of University Young Teacher	700
The Application of Smart 3D Modeling for Design Graphics of Environment Art Design Teaching	704
The Application of the Concept of Visual Interactive in Visual Communication Teaching	708
The Construction of Intelligent Transportation System Based on the Construction of Wisdom Campus -Take Soochow University as an Example	711
Tang Hengliang and Chen Chuanrong	

The Date Collection and Analysis in Roundabouts with Traffic Signals	715
The Design and Application of Multimedia Courseware in the Teaching of Art	
Design	719
The Design and implementation of University Personnel Management System Based on the Knowledge Staff Perspective	723
The Design of a Handlebar Appearance Detection System Based on Machine Vision	729
Zhang Sen and Qiu Kaijin	
The Design of Building Fire Monitoring System Based on ZigBee-WiFi Networks	733
Liu Yunhong and Qi Meini	
The Design of Double Cavity Intelligent Washing Machine System	736
The Design of Global Navigation Satellite System/Inertial Navigation System Ultra-Tight Integration for High Dynamic Applications Fang Hui and Feng Qin	739
The Design of SoC Platform Basaed on Digital Video Media Processing Technology	743
Liu Juanjuan, Liu Bin, and Liu Zhengguang The Development of Employment Platform That Basing on Smart Employment Miao Jing and Wang Yong	747
The Development and Application of Integrated Digital Classroom in "PC +Mobile Phone + WeChat" in the Ideological and Political Theory Course of Colleges and Universities	751
The Effects of Different Mesh Density of the Cerebrospinal Fluid on the Dynamic Responses of a 6 Years Old Child Finite Element Head Model	756
The Effects of Vehicle Front Design Variables and Impact Speed on Lower Extremity Injury in Pedestrian Collisions Using In-Depth Accident Data Bingyu Wang, Jikuang Yang, and Dietmar Otte	768
The Establishment of the Open Teaching Classroom	774
The Exploration of Modes for College Design Workshops Based on Cloud Platform	778

The Hood Frontal Collision Safety Performance Design	782
The Importance of Practical Subject in the Digital Prepress Design Teaching	788
The Improved Algorithm of the EMD Endpoint Effect Based on the Mirror Continuation	792
The Influence of Information Networking on Marxism Theory Education Liu Che	796
The Innovation of E-Book Design under the Background of Digital Media	801
The Match of Output Power and Conversion Efficiency of Thermoelectric Generation Technology for Vehicle Exhausts Waste Heat	805
The Real-Time Assessment of Freeway Traffic State Based on Variation Coefficient Method	811
The Research and Application of Content-Based Multi-feature Comprehensively Weighting Video-Image Retrieval Algorithm	817
The Research and Application of Purchase Amount Based User-KNN Algorithm on Cloud Platform in Coal Sales System	822
The Research of Digital Predistortion Linearization Mechanism by Fuzzy Decision	826
The Research of Measuring Plasma Parameters with Internal Double Langmuir Probe in Galatea	829
Tong Weiming, Jin Xianji, Li Zhongwei, and Zheng Menghui	
The Role of New Media in the 'Conceptual' Space Design Education	834
The Status and Model of Art and Design Online Course in the United States: Take the Art and Design Online Course in University of California, Berkeley as an Example	838
The Study of Digital Management in College Employment	842
The Study on the Structure Crash Responds of the New Energy Vehicle	846

The Survey and Application Research on Lianas in Hainan Island, China	851
Li Dongliang, Chen Xiaolu, Chen Xuan, Yang Jun, Zheng Daojun, Yun Yong, and Fu Ruikan	
The Teaching and Design of 'Micro Lecture' in College Art Education	855
The Teaching Concepts of the Environmental Artistic Design in the Information	
Era Context - Take Decoration Materials and Construction as an Example Chen Chuanrong and Tang Hengliang	859
The Traffic Characteristics of Three-Merge-One Road with Cellular Automaton	
Model	863
Ma Xinlu, Wang Di, Li Guochun, and Guan Xiaodong	070
Tourism Environment Quality Evaluation Based on Analytic Hierarchy Process	870
Towards the Statistical Understanding of Road Traffic Accident Occurrences in China	874
Zhai Qian, Li Fuyu, and Feng Wen	
Tracking Using Superpixel Features	878
Liu Jingjing, Chen Ying, Zha Cheng, Yu Hua, and Zhao Li	
Using the Computer Network Technology, the Realization of University Scientific Research Management Information	882
Yang Ying and Sun Zhen-Ye	
Utilizing the Virtualization Technology in Computer Operating System Teaching	885
Vehicle-to-Vehicle Rear Crashes in China - A Study of Accident	
Characteristics to Provide Input to Active Safety System Design	889
Bo Sui, Chengkai Ding, Rikard Fredriksson, Shengqi Zhou, and Xiaohua Zhao	
Virtual Evaluation of Headrest Geometry on C-NCAP Whiplash Injury Outcomes	897
Chengyue Jiang, Xi Liu, Dong Cui, Yuanzhi Hu, and Shugang Xie	
Visual, Interactive Teaching Design and Application on Advanced	
Mathematics Course in Application-Oriented Universities of Technology Zhou Lixin	901
Visualized Data Processing Technology under Cloud Computing	905
Watershed Segmentation Method of 3D Triangular Mesh Based on the Cubic	.
B-Spline	910

Author Index	923
Guo Qingda, Quan Yanming, and Zhu Zhengwei	
on Monocular Vision	919
Workpiece Posture Measurement and Intelligent Robot Grasping Based	
Guang Yang	
WiLocus: CSI Based Human Tracking System in Indoor Environment	915