Contents

Part I  Research on the Man Character

Head-Related Transfer Function Database of Chinese Male Pilots . . . . .  3
Xiaochao Guo, Duanqin Xiong, Yanyan Wang, Yiping Ma,
Dongdong Lu and Qingfeng Liu

Q–Q Test for Pilot Evaluation of Ergonomics in Aircraft Cockpit . . . . .  13
Xiaochao Guo, Yanyan Wang, Qingfeng Liu and Duanqin Xiong

Drivers’ Lane-Changing Maneuvers Detection in Highway . . . . . . . . .  21
Zhixiao Zheng, Penghui Li, Mengxia Hu, Wenhui Zhang
and Yibing Li

A Model Research for Evaluation of Community Workers’
Comprehensive Quality Based on BP Neural Network . . . . . . . .  31
Haiwei Peng, Xiaohui Peng and Xiaogao Wang

Predicting Navigation Performance in a Multi-module Space
Station Through Spatial Abilities . . . . . . . . . . . . . . . . . . . . . .  39
Junpeng Guo, Guohua Jiang, Yuqing Liu and Ming An

Comparative Analysis of the Psychological Health Education
Condition of College Students . . . . . . . . . . . . . . . . . . . . . . .  47
Yu Luo, Haiyan Dai, Qian Shen, Jialiang Li, Yunde Sun
and Peijun Zheng

An Evaluation Model of Body Force Feeling During Load Carriage . .  53
Yuhong Shen, Yafei Guo and Chenming Li

Research on Core Competence Training of Command Type
Graduates . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .  61
Rongzhi Yang, Xin Liu, Ruijie Wang, Haoran Zhu
and Yun Du
Behavioral Errors Analysis and Research on Management and Control of Troops Training Based on REASON Model .................. 73
Peng Gong, Zhengu Mei, Zaochen Liu, Leiming Yao, Yunqiang Xiang and Chang Mei

Research on Telegrapher Selection ........................................... 81
Hui Du, Guangwei Feng, Minchao Wang, Chenhui Li, Jianzhi Li, Yanjun Zhang, Jinxin Zan and Bainan Li

Experimental Research of Shoulder-Mounted Portable Equipment Operator’s Foot Spacing in Standing Position ................... 91
Zhaofeng Luo, Zhibing Pang, Meng Kang, Haitao Zhao, Yujie Wu, Jun Chen, Cheng Jin and Qi Ma

Applications of Rubric in the Assessment of Cadet’s Learning in Informationalized Teaching .......................... 99
Hai Chang, Meng Kang, Rongzhi Yang, Zhiqiang Zhang, Jie Xing and Xinpeng Chen

A Structural Equation Model of Job Burnout and Stress-Related Personality Factors in Aviators ..................... 105
Qingfeng Liu, Yanyan Wang, Xiaochao Guo, Fei Peng, Yan Zhang, Yu Bai, Tao Jiang and Duanqin Xiong

Trend Analysis of Low Back Pain in Ergonomic Area ............. 113
Xiaohong Guo, Menglu Li and Jie Li

Analyzing and Modeling of Crew Team Situation Awareness of 253 Airline Pilots .............................. 121
Shuang Liu, Zhen Liao, Yingwei Zhou, Xin Wang and Da Tao

Status and Effect Factors of Job Self-regulation of 253 Airline Pilots ........................................ 133
Yuchuan Luo and Xuemei Deng

The Testing Research on Basic Cognitive Ability’s Influence Factors in Special Vehicle Crewman .................. 141
Qun Wang, Fang Xie, Sijuan Zheng, Zhongliang Wei and Qianxiang Zhou

Evaluation of the Crew Workload to Quantify Typical Mission Profile Special Vehicles ............................ 149
Fang Xie, Qun Wang, Xiaoping Jin, Yuan Liao, Sijuan Zheng, Li Li, Qianxiang Zhou and Zhongqi Liu

Influence of Semantic Task on Selective Attention .................. 159
Yajuan Bai, Sai He, Renlai Zhou, Yuping Luo and Yaofeng He
Development of Computerized Tests for the Evaluation of Human Three-Dimensional Spatial Ability .................................. 169
Xianliang Mu, Yu Tian, Chunhui Wang, Junpeng Guo and Shoupeng Huang

Part II Research on the Machine Character

Fuzzy Time Series Based on K-means and Particle Swarm Optimization Algorithm .................................................. 181
Zonghao Tian, Peng Wang and Tianyu He

Investigation and Study on Habitability of a Certain Type Ship ........ 191
Hanqing Cao, Chuan Wang, Jianguo Zhang, Wenhao Zhan and Fenzhou Shi

A Method of Screening the Control Points of Road Stereo Image Based on RANSAC and Uniformity Theory ................. 201
Linbo Fang, Xiaoshan Song, Shuangyan Hu, Bei Wang and Sihai Yan

The Research of Application of Noncontact ECG Detection System in Manned Spaceflight .................................... 211
Lin Zhang, Guangjie Zhai, Hong Yan, Zhi Xu, Zhonggang Liang and Jinzhong Song

Research on Mouse Design Based on Ergonomics .................. 221
Haijiao Sun

Maintenance Human Factors Design and Analysis of Manned Lunar Rover ............................................................. 229
Shulin Liu, Na Jiao, Pinwang Zhao, Li Li, Wenjun Guo and Xi Lu

CFD Grid Auto-Generation Technique for Rapid Simulation of Thermal Design on Satellite Package ...................... 239
Shen Tian, Changyu Chen and Xiaobin Shen

Suppose Future Traffic Accidents Based on Development of Self-driving Vehicles ................................................. 253
Quan Yuan, Yan Gao and Yibing Li

Part III Research on the Environment Character

China’s Cement Industry Implicit Carbon Dioxide Emissions Research ................................................................. 265
Jinliang Zhan
Application of Acoustic Detection Technology in Reconnaissance Warning Equipments .......................... 275
Cheng Jin, Zhibing Pang, Runfeng Hou, Genhua Qi, Hongyan Ou
and Changhong Yuan

Research on the Building of Training Field of Complex Electromagnetic Environment ....................... 281
Shujie Zhang, Binliang Lu, Yan Sun and Honglei Li

Research on the Law of Biochemical Degradation of Solidified Sludge Based on 3D Fractal Dimension ........... 287
Pei Wang, Fei Xue, Jinxiang Yi and Fei Xu

Thermal Safety Assessment Test of Permeable Chemical Protective Clothing .............................................. 295
Ying Li, Xuezhi Zhang, Bo Yang and Shouxin Zhang

Visualization of Sound Field in Semi-closed Room Using Finite-Difference Time-Domain Method ............... 303
Dongdong Lu and Xiangyang Zeng

Auto-Body Structure Noise Analysis Based on Modal Analysis Method ................................................... 311
Zhongliang Wei, Minghui Chen, Fang Xie, Qun Wang, Liang Ling, Sijuan Zheng and Li Li

Analysis of Factors and Countermeasures for Astronaut Space Disorientation ........................................... 321
Xiuqing Zhu, Guohua Jiang, Yuqing Liu, Bohe Zhou, Ming An, Xuewen Chen and Fuchao Hu

Study on the Strategy of Disinfectant Using in China’s Space Station ...................................................... 331
Hong Yin, Yikui Zhao and Kanyan Xu

Part IV Research on the Man-Machine Relationship

Research on the Correlation Between the Viewing Screen Layout of In-Vehicle Information Terminal and Crew’s Mental Workload ................................................................. 341
Weiping Liu, Zheng Zhang, Junfeng Nie and Binhe Fu

On Usability Evaluation of Human–Machine Interactive Interface Based on Eye Movement ..................... 347
Chenhui Li, Zengjun Ji, Zhibing Pang, Shili Chu, Yonggang Jin, Jiahu Tong, Hualiang Xu and Yuxin Chen
On Application of Human–Machine Work Optimization in Equipment Operation ................................................... 355
Zhibing Pang, He Wei, Pengdong Zhang, Hong He, Honglei Li, Chenghui Li and Cheng Jin

Research on Weapon Human–Machine Interface Ergonomics Based on Visual Spatial Characteristics ................. 363
Yanjun Zhang, Chenhui Li, Zhibing Pang, Xiaofei Zhai, Guangwei Feng, Honglei Li and Genhua Qi

Application and Thinking of Motion Capture in Man–Machine Operation ......................................................... 373
Haitao Zhao, Honglei Li, Zhibing Pang, Chenhui Li, Cheng Jin, Pengdong Zhang, Quanliang Yin and Zhaofeng Luo

Characteristics Analysis and Design Discussion on New Human Interface of Electric Vehicle .............................. 381
Quan Yuan, Athanasios Theoﬁlatos, Yonghao Wang, Shangwen Wu and Yicong Liu

The Effect of One-Color and Multi-color Displays with HUD Information in Aircraft Cockpits ............................. 389
Duanqin Xiong, Qingfeng Liu, Xiaochao Guo, Qingjun Zhang, Qin Yao, Yu Bai, Jian Du and Yanyan Wang

Part V Research on the Man-Environment Relationship

Thermal Protective Performance Tests of Firefighters Clothing .... 401
Chenming Li, Yuhong Shen and Yafei Guo

Research on Connection Between Wind-Chill Factor and Human Perception in Extremely Cold Areas Experiment Environment .... 407
Jiang Wu, Zhibing Pang, Pengdong Zhang, Xuechen Yao, Honglei Li, Hualiang Xu and Chenhui Li

Research on Human Factor Solution to Improve Operating Performance in Northeast Cold Region ....................... 413
Pengdong Zhang, Honglei Li, Zhibing Pang, Cheng Jin, Chenhui Li, Haitao Zhao, Shuai Mu and Hui Gu

Research on Limit Boundary of High Temperature for Military Vehicle Personnel ........................................... 421
Heping Wang, Zhongren Xia and Yanwei Wu

Part VI Research on the Machine-Environment Relationship

The Impacts on the Operational-Using of a Type of Information System in the Conditions of High-Frigid Mountainous Region .... 431
Zuohui Bao, Zuobin Yang, Shukai Liang, Ruijie Yin and Yangke Liu
Part VII  Research on the Overall Performance of
Man-Machine-Environment System

Virtual Verification System of MME Design for Ship
Control Cabins .......................................................... 439
Kun Yu, Ying Zhang and Shuqin Zhao

Analysis of Safety Investment and Safety Benefit
in Coal Enterprise .................................................. 447
Yan Li, Jingman Li and Jianping Jiang

Subway Crowded and Stampede Neural Networks Safety
Assessment Basing on SHEL Model ............................. 455
Qiquan Wang

A Human Factors Integrated Methods for Weapon System
Effectiveness Evaluation ............................................ 469
Shilei Liu and Hao Li

Study of Risk Factors, Organization Method, and Risk Assessment
in Troops’ Live Hand Grenade Training ......................... 481
Zhenguo Mei, Chang Mei, Ye Tao and Leiming Yao

Research on the Root Causes of Car Accidents
in Air Defense Forces ............................................... 489
Zhenguo Mei, Shichang Wang, Chang Mei, Ye Tao
and Peng Gong

Creative Research on Recruit Training Based on Myocardial
Enzymogram Perspective .......................................... 497
Ye Tao, Wenying Xing and Zhenguo Mei

Research on Risk Identification of Actual Combat Training
of Troops .................................................................. 505
Leiming Yao, Zhenguo Mei, Zaochen Liu, Peng Gong,
Yunqiang Xiang and Chang Mei

Research on Operators’ Selection Testing System Based on VTS .... 515
Runfeng Hou, Zhibing Pang, Cheng Jin, Zaochen Liu, Hongyan Ou
and Haitao Zhao

Research on Evaluation Index and Method of CRM Training ........ 521
Yanyan Wang, Qingfeng Liu, Xue Yang, Duanqin Xiong,
Yu Bai, Jian Du and Xiaochao Guo

Mechanism Analysis of Astronaut Manual Rendezvous
and Docking Human Error Based on Reason Model ........... 533
Jiayi Cai, Weifen Huang and Jie Li
List of Metacognitive Questions and Training Program Design in Manual Rendezvous and Docking ........................................... 541
Jiayi Cai, Weifen Huang and Jie Li

The Man–Machine–Environment System Evaluation Method During the Maintenance Process Based on Virtual Prototyping .................. 553
Qiufang Wang, Shulin Liu, Jinlong Zhao, Sijuan Zheng and Na Jiao

Design and Application of Ergonomic Virtual Experiment System for the Armored Vehicles ......................................................... 565
Shunwang Xiao, Haiyan Niu, Yaofeng He and Lei Zou

Implementation of Ergonomic Virtual Experiment System for the Armored Vehicles .............................................................. 573
Haiyan Niu, Shunwang Xiao, Lei Zou and Yaofeng He

Research on Desktop System of the Space Flight Training-Simulator ... 583
Shang Huan, Suqin Wang and Hua Deng

Analysis and Research on Information Security for Military Academies ...................................................................................... 593
Shisheng Cheng, Yongqing Zhang, Qianqian Wu and Rong Liu

Part VIII  Theory and Application Research

Application of Man–Machine–Environment System Engineering in Coal Mine Accident ......................................................... 601
Xing Zhao and Shangquan Ma

Research on the Characteristics and Expression of Modern Hospital Design ............................................................................... 609
Zhen Li and Fang Liu

Research on Modern Office Chair Design Based on Human–Machine–Environment System Engineering ................................. 617
Yifeng Du

Application Prospect of Big Data in Military Physical Education and Sports ............................................................................... 627
Jingran Huang and Weiming Deng
Man-Machine-Environment System Engineering
Proceedings of the 16th International Conference on MMESE
Long, S.; Dhillon, B.S. (Eds.)
2016, XXII, 635 p. 170 illus., Hardcover
ISBN: 978-981-10-2322-4