Table of Contents

Part I: Anthropometry Applications

The Effects of Landmarks and Training on 3D Surface Anthropometric Reliability and Hip Joint Center Prediction 3
Wen-Ko Chiou, Bi-Hui Chen, and Wei-Ying Chou

An Automatic Method for Computerized Head and Facial Anthropometry 12
Jing-Jing Fang and Sheng-Yi Fang

3D Parametric Body Model Based on Chinese Female Anhtropometric Analysis 22
Peng Sixiang, Chan Chee-kooi, W.H. Ip, and Ameersing Luximon

Anthropometric Measurement of the Feet of Chinese Children 30
Linghua Ran, Xin Zhang, Chuzhi Chao, and Taijie Liu

Human Dimensions of Chinese Minors 37
Xin Zhang, Yanyu Wang, Linghua Ran, Ailan Feng, Ketai He, Taijie Liu, and Jianwei Niu

Development of Sizing Systems for Chinese Minors 46
Xin Zhang, Yanyu Wang, Linghua Ran, Ailan Feng, Ketai He, Taijie Liu, and Jianwei Niu

Part II: Posture and Motion Modeling

Motion Capture Experiments for Validating Optimization-Based Human Models 59
Aimee Cloutier, Robyn Boothby, and Jingzhou (James) Yang

Posture Reconstruction Method for Mapping Joint Angles of Motion Capture Experiments to Simulation Models 69
Jared Gragg, Jingzhou (James) Yang, and Robyn Boothby

Joint Torque Modeling of Knee Extension and Flexion 79
Fabian Guenzkofer, Florian Engstler, Heiner Bubb, and Klaus Bengler

Predicting Support Reaction Forces for Standing and Seated Tasks with Given Postures-A Preliminary Study 89
Brad Howard and Jingzhou (James) Yang

Bibliografische Informationen
http://d-nb.info/1011731754

digitalisiert durch DEUTSCHE NATIONAL BIBLIOTHEK

Schema for Motion Capture Data Management 99
Ali Keyvani, Henrik Johansson, Mikael Ericsson, Dan Lämkull, and Roland Örtengren

Simulating Ingress Motion for Heavy Earthmoving Equipment 109
HyunJung Kwon, Mahdiar Hariri, Rajan Bhatt, Jasbir Arora, and Karim Abdel-Malek

Contact Area Determination between a N95 Filtering Facepiece Respirator and a Headform 119
Zhipeng Lei and Jingzhou (James) Yang

Ergonomics Evaluation of Three Operation Postures for Astronauts 129
Dongxu Li and Yan Zhao

In Silicon Study of 3D Elbow Kinematics 139
Kang Li and Virak Tan

Implicit Human-Computer Interaction by Posture Recognition 143
Enrico Maier

Optimization-Based Posture Prediction for Analysis of Box Lifting Tasks 151
Tim Marler, Lindsey Knake, and Ross Johnson

Planar Vertical Jumping Simulation-A Pilot Study 161
Burak Ozsoy and Jingzhou (James) Yang

StabilitySole: Embedded Sensor Insole for Balance and Gait Monitoring 171
Peyton Paulick, Hamid Djalilian, and Mark Bachman

The Upper Extremity Loading during Typing Using One, Two and Three Fingers 178
Jin Qin, Matthieu Trudeau, and Jack T. Dennerlein

Automatic Face Feature Points Extraction 186
Dominik Rupprecht, Sebastian Hesse, and Rainer Blum

3D Human Motion Capturing Based only on Acceleration and Angular Rate Measurement for Low Extremities 195
Christoph Schiefer, Thomas Kraus, Elke Ochsmann, Ingo Hermanns, and Rolf Ellegast

Application of Human Modeling in Multi-crew Cockpit Design 204
Xiaohui Sun, Feng Gao, Xiugan Yuan, and Jingquan Zhao

A Biomechanical Approach for Evaluating Motion Related Discomfort: by an Application to Pedal Clutching Movement 210
Xuguang Wang, Romain Pannetier, Nagananda Krishna Burra, and Julien Numa

Footbed Influences on Posture and Perceived Feel 220
Thilina W. Weerasinghe and Ravindra S. Goonetilleke

Postural Observation of Shoulder Flexion during Asymmetric Lifting Tasks 228
Xu Xu, Chien-Chi Chang, Gert S. Faber, Idsart Kingma, and Jack T. Dennerlein

An Alternative Formulation for Determining Weights of Joint Displacement Objective Function in Seated Posture Prediction 231
Qiuling Zou, Qinghong Zhang, Jingzhou (James) Yang, Robyn Boothby, Jared Gragg, and Aimee Cloutier

Part III: Digital Human Modeling and Design

Videogames and Elders: A New Path in LCT? 245
Nicola D'Aquaro, Dario Maggiorini, Giacomo Mancuso, and Laura A. Ripamonti

Research on Digital Human Model Used in Human Factor Simulation and Evaluation of Load Carriage Equipment 255
Dayong Dong, Lijing Wang, Xiugan Yuan, and Shan Fu

Multimodal, Touchless Interaction in Spatial Augmented Reality Environments 263
Monika Elepfandt and Marcelina Sünderhauf

Introducing ema (Editor for Manual Work Activities) – A New Tool for Enhancing Accuracy and Efficiency of Human Simulations in Digital Production Planning 272
Lars Fritzsche, Ricardo Jendrusch, Wolfgang Leidholdt, Sebastian Bauer, Thomas Jäckel, and Attila Pirger

Accelerated Real-Time Reconstruction of 3D Deformable Objects from Multi-view Video Channels 282
Holger Graf, Leon Hazke, Svenja Kahn, and Cornelius Malerczyk

Second Life as a Platform for Creating Intelligent Virtual Agents 292
Larry F. Hodges, Amy Ulinski, Toni Bloodworth, Austen Hayes, John Mark Smotherman, and Brandon Kerr

A Framework for Automatic Simulated Accessibility Assessment in Virtual Environments 302
Nikolaos Kaklanis, Panagiotis Moschonas, Konstantinos Moustakas, and Dimitrios Tzovaras

Cloth Modeling and Simulation: A Literature Survey 312
James Long, Katherine Burns, and Jingzhou (James) Yang

Preliminary Study on Dynamic Foot Model 321
Ameersing Luximon and Yan Luximon

Three-Dimensional Grading of Virtual Garment with Design Signature Curves 328
Roger Ng

A Model of Shortcut Usage in Multimodal Human-Computer Interaction 337
Stefan Schaffer, Robert Schleicher, and Sebastian Möller

Multimodal User Interfaces in IPS^2 347
Ulrike Schmuntzsch and Matthias Rötting

The Application of the Human Model in the Thermal Comfort Assessment of Fighter Plane's Cockpit 357
Haifeng Shen and Xiugan Yuan

Mass Customization Methodology for Footwear Design 367
Yifan Zhang, Ameersing Luximon, Xiao Ma, Xiaoling Guo, and Ming Zhang

Part IV: Cognitive Modeling

Incorporating Motion Data and Cognitive Models in IPS^2 379
Michael Beckmann and Jeronimo Dzaack

Study on Synthetic Evaluation of Human Performance in Manually Controlled Spacecraft Rendezvous and Docking Tasks 387
Ting Jiang, Chunhui Wang, Zhiqiang Tian, Yongzhong Xu, and Zheng Wang

Dynamic Power Tool Operation Model: Experienced Users vs. Novice Users 394
Jia-Hua Lin, Raymond W. McGorry, and Chien-Chi Chang

An Empirical Study of Disassembling Using an Augmented Vision System 399
Barbara Odenthal, Marcel Ph. Mayer, Wolfgang Kabuß, Bernhard Kausch, and Christopher M. Schlick

Polymorphic Cumulative Learning in Integrated Cognitive Architectures for Analysis of Pilot-Aircraft Dynamic Environment 409
Yin Tangwen and Shan Fu

A Context-Aware Adaptation System for Spatial Augmented Reality ... 417
Anne Wegerich and Matthias Rötting

Using Physiological Parameters to Evaluate Operator's Workload in Manual Controlled Rendezvous and Docking (RVD) 426
Bin Wu, Fang Hou, Zhi Yao, Jianwei Niu, and Weifen Huang

Task Complexity Related Training Effects on Operation Error of Spaceflight Emergency Task 436
Yijing Zhang, Bin Wu, Xiang Zhang, Wang Quanpeng, and Min Liu

The Research of Crew Workload Evaluation Based on Digital Human Model 446
Yiyuan Zheng and Shan Fu

Part V: Driver Modeling

A Simulation Environment for Analysis and Optimization of Driver Models 453
Ola Benderius, Gustav Markkula, Krister Wolff, and Mattias Wahde

Learning the Relevant Percepts of Modular Hierarchical Bayesian Driver Models Using a Bayesian Information Criterion 463
Mark Eilers and Claus Möbus

Impact and Modeling of Driver Behavior Due to Cooperative Assistance Systems 473
Florian Laquai, Markus Duschl, and Gerhard Rigoll

Predicting the Focus of Attention and Deficits in Situation Awareness with a Modular Hierarchical Bayesian Driver Model 483
Claus Möbus, Mark Eilers, and Hilke Garbe

The Two-Point Visual Control Model of Steering - New Empirical Evidence 493
Hendrik Neumann and Barbara Deml

Automation Effects on Driver's Behaviour When Integrating a PADAS and a Distraction Classifier 503
Fabio Tango, Luca Minin, Raghav Aras, and Olivier Pietquin

What is Human? How the Analysis of Brain Dynamics Can Help to Improve and Validate Driver Models 513
Sebastian Welke, Janna Protzak, Matthias Rötting, and Thomas Jürgensohn

Less Driving While Driving? An Approach for the Estimation of Effects of Future Vehicle Automation Systems on Driver Behavior 523
Bertram Wortelen and Andreas Lüdtke

Author Index 533