Contents – Part II

Anthropometry and Ergonomics

Estimation of Arbitrary Human Models from Anthropometric Dimensions . . . 3
  Yui Endo, Mitsunori Tada, and Masaaki Mochimaru

Optimisation of Product’s Hand-Handle Interface Material Parameters for Improved Ergonomics. ................................................................. 15
  Gregor Harih, Matej Borovinšek, and Zoran Ren

An Approach for Intuitive Visualization of Ergonomic Issues .................. 26
  Walentin Heft, Michael Spitzhirm, Angelika C. Bullinger, and Paul Rosenthal

Correlation Analysis on the Main and Basic Body Dimension for Chinese Adults ........................................................................................................... 37
  Hui-min Hu, Chao-yi Zhao, Xin Zhang, Ling-hua Ran, and Tai-jie Liu

The Experimental Research of the Thumb’s Comfortable Control Area ...... 44
  Hui-min Hu, Junmin Du, Chaoyi Zhao, Fan Yang, and Ling-hua Ran

Study on the Body Shape of Middle-Aged and Old Women for Garment Design. ............................................................................................................. 53
  Xiaoping Hu and Yan Zhao

  Thomas Kölling, Michael Krees, Mathias Hüsing, and Burkhard Corves

The Role of Virtual Ergonomic Simulation to Develop Innovative Human Centered Products .................................................................................................. 74
  Daniele Regazzoni, Caterina Rizzi, and Giorgio Colombo

Anthropometric Casualty Estimation Methodologies ............................... 84
  Daniel Rice and Medhat Korna

Experimental Study on Grip Ergonomics of Manual Handling ............... 92
  Ai-ping Yang, Guang Cheng, Wen-yu Fu, Hui-min Hu, Xin Zhang, and Chau-Kuang Chen
XIV Contents – Part II

Moment Analysis of Virtual Human Joint Based on JACK. .......................... 100
Qianxiang Zhou, Qingsong Yin, Zhongqi Liu, Fang Xie, and Shihua Zhou

Motion Modeling and Tracking

Parameter Estimation from Motion Tracking Data .................................... 113
Csaba Antonya, Silviu Butnariu, and Horia Beles

Body Tracking as a Generative Tool for Experience Design ...................... 122
Monica Bordegoni, Serena Camere, Giandomenico Caruso, and Umberto Cugini

Modeling and Simulating Lifting Task of Below-Knee Amputees ................ 134
Yan Fu, Shiqi Li, Qian Chen, and Wei Zhou

Real-Time Static Gesture Recognition for Upper Extremity Rehabilitation Using the Leap Motion ................................................................. 144
Shawn N. Gieser, Angie Boisselle, and Fillia Makedon

Experience Factors Influence on Motion Technique of “The Way of Tea” by Motion Analysis .............................................................. 155
Soutatsu Kanazawa, Tomoko Ota, Zelong Wang, Thodsaratpreeyakul Wiranpaht, Yuka Takai, Akihiko Goto, and Hiroyuki Hamada

Study of Caregiver’s Waist Movement Comparison Between Expert and Non-expert During Transfer Care ...................................................... 164
Mengyuan Liao, Takashi Yoshikawa, Akihiko Goto, Yoshihiro Mizutani, Tomoko Ota, and Hiroyuki Hamada

Effect of Care Gesture on Transfer Care Behavior in Elderly Nursing Home in Japan ................................................................. 174
Mengyuan Liao, Takashi Yoshikawa, Akihiko Goto, Tomoko Ota, and Hiroyuki Hamada

Balancing Power Consumption and Data Analysis Accuracy Through Adjusting Sampling Rates: Seeking for the Optimal Configuration of Inertial Sensors for Power Wheelchair Users ................................ 184
Tao Liu, Chuanwei Chen, Melicent King, Gang Qian, and Jicheng Fu

MoCap-Based Adaptive Human-Like Walking Simulation in Laser-Scanned Large-Scale as-Built Environments ........................................ 193
Tsubasa Maruyama, Satoshi Kanai, and Hiroaki Date
Electromyography Measurement of Workers at the Second Lining Pounding Process for Hanging Scrolls

Yasuhiro Oka, Yuka Takai, Akihiko Goto, Hisanori Yuminaga, and Kozo Oka

EMG Activity of Arms Muscles and Body Movement During Chucking in Lathe between Expert and Non-expert.

Porakoch Sirisuwan, Hisanori Yuminaga, Takashi Yoshikawa, and Hiroyuki Hamada

Process Analysis of the Hand Lay-Up Method Using CFRP Prepreg Sheets

Toshikazu Uchida, Hiroyuki Hamada, Koji Kuroda, Atsushi Endo, Masakazu Migaki, Junpei Ochiai, Tadashi Uozumi, and Akihiko Goto

Human Modeling in Transport and Aviation

Hybrid BFO-PSO and Kernel FCM for the Recognition of Pilot Performance Influenced by Simulator Movement Using Diffusion Maps

Jia Bo, Yin-Bo Zhang, Lu Ding, Bi-Ting Yu, Qi Wu, and Shan Fu

A Bi-level Optimization Approach to Get an Optimal Combination of Cost Functions for Pilot’s Arm Movement: The Case of Helicopter’s Flying Aid Functions with Haptic Feedback

Sami Cheffi, Thomas Rakotomamonjy, Laurent Binet, Philippe Bidaud, and Jean Christophe Sarrazin

Development of a 3D Finite Element Model of the Chinese 50th Male for the Analysis of Automotive Impact

Hui-min Hu, Li Ding, Xianxue Li, Chaoyi Zhao, and Yan Yin

Biomechanical Analysis of Human Thorax and Abdomen During Automotive Impact

Hui-min Hu, Li Ding, Xianxue Li, Chaoyi Zhao, and Yan Yin

Toward a Model for Effective Human-Automation Interaction: The Mediated Agency

Kevin Le Goff, Arnaud Rey, and Bruno Berberian

Semantically Integrated Human Factors Engineering

Sebastien Mamessier, Daniel Dreyer, and Matthias Oberhauser

Single-Variable Scenario Analysis of Vehicle-Pedestrian Potential Crash Based on Video Analysis Results of Large-Scale Naturalistic Driving Data

Renran Tian, Lingxi Li, Kai Yang, Feng Jiang, Yaobin Chen, and Rini Sherony
Driving-Behavior Monitoring Using an Unmanned Aircraft System (UAS) . . . 305
Calvin Zheng, Andreina Breton, Wajeeh Iqbal, Ibaad Sadiq, Elsayed Elsayed, and Kang Li

Human Modeling in Medicine and Surgery

A Mobile Application for the Stereoacuity Test . . . . . . . . . . . . . . . . . . . . . 315
Silvia Bonfanti, Angelo Gargantini, and Andrea Vitali

Automatic Identification of Below-Knee Residuum Anatomical Zones . . . . 327
Giorgio Colombo, Giancarlo Facoetti, Caterina Rizzi, and Andrea Vitali

Visual Comparison of 3D Medical Image Segmentation Algorithms Based
on Statistical Shape Models . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 336
Alexander Geurts, Georgios Sakas, Arjan Kuijper, Meike Becker, and Tatiana von Landesberger

Analyzing Requirements Using Environment Modelling . . . . . . . . . . . . . . . 345
Dominique Méry and Neeraj Kumar Singh

Modeling of a Virtual Open Platform for Human Cranium Simulation . . . . 358
Pedro Perestrelo, Mauricio Torres, Pedro Noritomi, and Jorge Silva

Influence of Proficiency on Eye Movement of the Surgeon for Laparoscopic
Cholecystectomy . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 367
Hisanori Shiomi, Masamori Notsu, Tomoko Ota, Yuka Takai, Akihiko Goto, and Hiroyuki Hamada

Formalizing the Cardiac Pacemaker Resynchronization Therapy . . . . . . . . . 374
Neeraj Kumar Singh, Mark Lawford, Thomas S.E. Maibaum, and Alan Wassyng

Stepwise Formal Modelling and Reasoning of Insulin Infusion Pump
Requirements . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 387
Neeraj Kumar Singh, Hao Wang, Mark Lawford, Thomas S.E. Maibaum, and Alan Wassyng

Quality in Healthcare

Later Life: Living Alone, Social Connectedness and ICT . . . . . . . . . . . . . . . 401
Alma L. Culén

Effective Design of Traditional Japanese Tea Ceremony in a Group Home
for the Elderly with Dementia . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 413
Teruko Doi, Noriaki Kuwahara, and Kazunari Morimoto
A Collaborative Change Experiment: Diagnostic Evaluation of Telecare for Elderly Home Dwellers ................................. 423

Suhas Govind Joshi and Anita Woll

A Mobile Visual Diary for Personal Pain Management ......................... 435

Tor-Morten Gronli, Gheorghita Ghinea, and Fotis Spyridonis

Usefulness of Ikebana a Nursing Care Environment .............................. 441

Yuki Ikenobo, Yusaku Mochizuki, and Akinori Kuwahara

Usability of Mobile Applications Supporting Training in Diagnostic Decision-Making by Radiologists ............................... 448

Min Soon Kim, Awatef A. Ben Ramadan, Martina A. Clarke,
Mia K. Markey, Kraig J. Lage, Michael R. Aro, Kevin L. Ingalls,
and Vivek Sindhwani

An Investigation of Caregiver’s Fatigue During Nursing Work in China .. 455

Mengyuan Liao, Yuqiu Yang, Yuka Takai, Takashi Yoshikawa,
Akihiko Goto, Ting Yang, Tomoko Ota, and Hiroyuki Hamada

Mobile Application to Aid in the Prevention of Pressure Ulcers .............. 465

Alvaro G. Lima, Lara Araújo, Isabel Italiano, and Luciano V. Araujo

Development of a Self-learning System for Chest Auscultation Skills
Using an RFID Reader for Nursing Students .................................... 474

Mitsuhiro Nakamura, Kyohei Koyama, Yasuko Kitajima, Jukai Maeda,
and Masako Kanai-Pak

The Digital Reminiscence Method: Effect on Dementia in Japanese Day Care Centers ................................................. 482

Masayuki Nakamura, Takashi Yoshikawa, Kayo Tanaka,
Mengyuan Liao, and Noriaki Kuwahara

Verbal and Nonverbal Skills in Open Communication:
Comparing Experienced and Inexperienced Radio Duos ....................... 490

Noriko Suzuki, Yu Oshima, Haruka Shoda, Mamiko Sakata,
and Noriko Ito

The Transfer of Expertise in Conducting a Participatory Music Therapy During a Combined Rehabilitation-Recreational Program in an Elderly Care Facility ............................................. 500

Akiyoshi Yamamoto, Henry Cereno Barrameda Jr., Tatsunori Azuma,
Hideaki Kasasaku, Kayoko Hirota, Momo Jinno, Maki Sumiyama,
Tomoko Ota, Akihiko Goto, Noriyuki Kida, Noriaki Kuwahara,
and Hiroyuki Hamada
Research of Work Climate at Nursing Home - From Job Separation and Management Capability Point ................................. 512
Akiyoshi Yamamoto, Tomoko Ota, Akihiko Goto, Noriyuki Kida,
Hiroyuki Hamada, Henry Cereno Barrameda Jr., and Tatsunori Azuma

Caregiver’s Eye Gaze and Field of View Presumption Method During Bathing Care in Elderly Facility ............................... 524
Akiyoshi Yamamoto, Tatsunori Azuma, Henry Cereno Barrameda Jr.,
Noriyuki Kida, Akihiko Goto, and Tomoko Ota

Author Index ......................................................... 533
Contents – Part I

Modeling Human Skills and Expertise

Comparison Knitting Skills Between Experts and Non-experts by Measurement of the Arm Movement

Kontawat Chottikampon, Shunyu Tang, Suchalinee Mathurosemontri, Porakoch Sirisuwan, Miyako Inoda, Hiroyuki Nishimoto, and Hiroyuki Hamada

Comparison of Braiding Skills Between Expert and Non-experts by Eye’s Movement Measurement

Kontawat Chottikampon, Suchalinee Mathurosemontri, Hitoshi Marui, Porakoch Sirisuwan, Akihiko Goto, Tadashi Uozumi, Miyako Inoda, Makiko Tada, Hiroyuki Nishimoto, and Hiroyuki Hamada

Effect of Skill Level Difference in the Polishing Process of the Maki-e Making Technique

Atsushi Endo, Hisanori Yuminaga, Chihiro Akatsuka, Takuya Sugimoto, Yutaro Shimode, and Hiroyuki Hamada

Study on Method of Observing Maki-e Crafts Work in Urushi Craftspeople

Atsushi Endo, Noriyuki Kida, Yutaro Shimode, Isao Oda, Yuka Takai, Akihiko Goto, and Hiroyuki Hamada

Comparison of Description Skill on Characteristics of the Urushi Crafts Work Between Expert Craftspeople and Non-expert Craftspeople

Atsushi Endo, Mari Shimode, Yutaro Shimode, Seishi Namiki, Noriaki Kuwahara, and Hiroyuki Hamada

Analysis of Eye Movement of Caregiver Concerning on Transfer Operation

Akihiko Goto, Mengyuan Liao, Yuka Takai, Takashi Yoshikawa, and Hiroyuki Hamada

Analysis of the Skills to Acupuncture

Yoshio Ikai, Masakazu Migaki, Noriyuki Kida, Hidehisa Iwamoto, and Hiroyuki Hamada

Differences in How Long an Ikebana Work Lasts Depending on the Skill Used in Cutting Floral Materials

Yuki Ikenobo, Zelong Wang, Yusuke Shiraishi, and Akihiko Goto
Study of Caregivers’ Skills for Monitoring Senior Residents. .......... 83
   Mikako Ito, Yuka Takai, Akihiko Goto, and Noriaki Kuwahara

Research on the Performance of Three Tea Whisks of “The Way of Tea”
with Different Experience. ............................................. 95
   Soutatsu Kanazawa, Tomoko Ota, Zelong Wang, Akihiro Tada,
   Yuka Takai, Akihiko Goto, and Hiroyuki Hamada

Effects of Quantified Instructional Tool on Spray-up Fabrication Method . . . 104
   Tetsuo Kikuchi, Erika Suzuki, Yiyi Zhang, Yuka Takai, Akihiko Goto,
   and Hiroyuki Hamada

An Investigation on Conversion from Tacit Knowledge to Explicit
Knowledge in Hand Lay-Up Fabrication Method .......................... 114
   Tetsuo Kikuchi, Erika Suzuki, Yuka Takai, Akihiko Goto,
   and Hiroyuki Hamada

Process Analysis of Manufacturing of Sewing Scissors by All Forging
Process and Understanding of Its Sharpness ................................ 124
   Yasuko Kitajima, Kazuki Kito, Masakazu Migaki, Kanji Matsumuro,
   Yasuhiro Murata, and Hiroyuki Hamada

Expert vs. Elementary Skill Comparison and Process Analysis in VaRTM-
Manufactured Carbon Fiber Reinforced Composites ........................ 133
   Yasunari Kuratani, Kentaro Hase, Takahiro Hosomi, Tomoe Kawazu,
   Tadashi Uozumi, Akihiko Goto, and Hiroyuki Hamada

The Relationship Between Mechanical Properties and the Method
Technique of GFRP Plate by Hand Lay-up Method: Effect of the Workers
Experience ................................................................. 143
   Masakazu Migaki, Keisuke Ono, Ryo Takematsu, Yusaku Mochizuki,
   Eijutsu Ko, Daiki Ichikawa, and Hiroyuki Hamada

Researching Sounds Generated During the Second Lining Pounding
Process ................................................................. 154
   Yasuhiro Oka, Yuka Takai, Akihiko Goto, Keisuke Ono, and Kozo Oka

EMG Activity Analysis of Expert Skills on Handheld Grinding Work
for Metallographic Sample ................................................ 165
   Takuya Sugimoto, Hisanori Yuminaga, Hiroyuki Nishimoto,
   and Akihiko Goto

Difference in Polishing Process of FRP Between Expert and Non-expert .... 174
   Takuya Sugimoto, Daiki Ichikawa, Hiroyuki Nishimoto,
   Yoshiaki Yamato, and Akihiko Goto
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>An Investigation on Skillful Gel-Coat Techniques and Its Application</td>
<td>182</td>
</tr>
<tr>
<td>Erika Suzuki, Tetsuo Kikuchi, Yuka Takai, Akihiko Goto, and Hiroyuki Hamada</td>
<td></td>
</tr>
<tr>
<td>Numerical Analysis on “Kana-Ami” Structure Between Expert and Non-expert</td>
<td>192</td>
</tr>
<tr>
<td>Zelong Wang, Ken-ichi Tsuji, Toru Tsuji, Koji Ishizaki, Yuka Takai, Akihiko Goto, and Hiroyuki Hamada</td>
<td></td>
</tr>
<tr>
<td>Motion Analysis of Interval Time During “Kana-ami” Making Process</td>
<td>201</td>
</tr>
<tr>
<td>Zelong Wang, Ken-ichi Tsuji, Toru Tsuji, Yuka Takai, Akihiko Goto, and Hiroyuki Hamada</td>
<td></td>
</tr>
<tr>
<td>Brain Activity Analysis on “Kana-Ami” Making Process</td>
<td>212</td>
</tr>
<tr>
<td>Zelong Wang, Ken-ichi Tsuji, Toru Tsuji, Yuka Takai, Akihiko Goto, and Hiroyuki Hamada</td>
<td></td>
</tr>
<tr>
<td><strong>Modeling Human Work and Activities</strong></td>
<td></td>
</tr>
<tr>
<td>Human Performance Modeling for Dynamic Human Reliability Analysis</td>
<td>223</td>
</tr>
<tr>
<td>Ronald Laurids Boring, Jeffrey Clark Joe, and Diego Mandelli</td>
<td></td>
</tr>
<tr>
<td>Improvement of Needle Bar in Textile Machine by Hitting Process</td>
<td>235</td>
</tr>
<tr>
<td>Kontawat Chottikampon, Suchalinee Mathurosemontri, Hitoshi Marui, Ryo Marui, Hiroyuki Nishimoto, and Hiroyuki Hamada</td>
<td></td>
</tr>
<tr>
<td>Towards a Theory for Bio–Cyber Physical Systems Modelling</td>
<td>245</td>
</tr>
<tr>
<td>Didier Fass and Franck Gechter</td>
<td></td>
</tr>
<tr>
<td>Colorimetry and Impression Evaluation of Insert Molded GFRP Plate</td>
<td>256</td>
</tr>
<tr>
<td>with Black Silk Fabrics</td>
<td></td>
</tr>
<tr>
<td>Kiyoshi Fujiwara, Erika Suzuki, Tetsuo Kikuchi, Takashi Furukawa, Takahiro Suzuki, Atsushi Endo, Yutaro Shimode, Yuka Takai, and Yuqi Yang</td>
<td></td>
</tr>
<tr>
<td>Light Transmission Properties of Insert Molded GFRPs with Different Crape Structure of Silk Fabrics</td>
<td>267</td>
</tr>
<tr>
<td>Kiyoshi Fujiwara, Erika Suzuki, Tetsuo Kikuchi, Takashi Furukawa, Atsushi Endo, Yuka Takai, and Yuqi Yang</td>
<td></td>
</tr>
<tr>
<td>Evaluation of Kimono Clothes in Kyo-Yuzen-Zome Using Image</td>
<td>277</td>
</tr>
<tr>
<td>Takashi Furukawa, Yuka Takai, Noriaki Kuwahara, and Akihiko Goto</td>
<td></td>
</tr>
<tr>
<td>Effects of Spray Gun Handling of Automobile Repair on Carrier of Car Mechanic</td>
<td>289</td>
</tr>
<tr>
<td>Shigeru Ikemoto, Kenta Morimoto, Yuka Takai, Akihiko Goto, and Hiroyuki Hamada</td>
<td></td>
</tr>
</tbody>
</table>

**Contents – Part I XXI**
Visual Evaluation of “The Way of Tea” Based on Questionnaire Survey Between Chinese and Japanese ................................................................................................................................. 299
Soutatsu Kanazawa, Tomoko Ota, Zelong Wang, Rutchaneeekorn Wongpajan, Yuka Takai, Akihiko Goto, and Hiroyuki Hamada

A Study of the Tacit Knowledge on the Design of Kimono Patterns from Japanese Painting .................................................................................................................. 307
Masashi Kano, Hiroyuki Akaji, Noriaki Kuwahara, and Hiroyuki Hamada

Comparison of KEMOMI Technique Between Master Craftsman and Unskilled Worker ................................................................................................................................. 316
Shinichiro Kawabata, Zhilan Xu, Akihiko Goto, and Hiroyuki Hamada

Inside the User’s Mind – Perception of Risks and Benefits of Unknown Technologies, Exemplified by Geothermal Energy ......................................................... 324
Johanna Kluge, Sylvia Kowalewski, and Martina Ziegel

Factor of Feeling “Hannari” from Kimono Images .................................................................................................................................................................................. 335
Kumiko Komizo, Noriaki Kuwahara, and Kazunari Morimoto

Human Machine Epistemology Survey ........................................................................................................................................................................ 345
Rémi Nazin and Didier Fass

A Study on Learning Effects of Marking with Highlighter Pen ................................................................................................................................. 357
Hiroki Nishimura and Noriaki Kuwahara

Process Analysis of Kyo Karakami Manufacturing ............................................................................................................................................................................. 368
Seiji Senda, Erika Suzuki, Tetsuo Kikuchi, Mitsunori Suda, and Yuka Takai

Exploring How People Collaborate with a Stranger: Analyses of Verbal and Nonverbal Behaviors in Abstract Art Reproduction ................................................................................. 379
Haruka Shoda, Tomoki Yao, Noriko Suzuki, and Mamiko Sakata

Process Analysis of Expert and Non-expert Engineers in Quartz Glass Joint Process ........................................................................................................................................ 389
Masamichi Suda, Toru Takahashi, Akio Hattori, Yuqiu Yang, Akihiko Goto, and Hiroyuki Hamada

Comparison of Eye Movement During the Polishing Process of Metallographic Sample Between Expert and Nonexpert ................................................................................. 399
Takuya Sugimoto, Yuka Takai, Hiroyuki Nishimoto, and Akihiko Goto

Omotenashi in the Japanese Bridal Market .............................................................................................................................................................................. 411
Shigeyuki Takami, Aya Takai, Takuya Sugimoto, Masamichi Suda, and Hiroyuki Hamada
A Study on Characteristic of Calligraphy Characters Part 1 Analytical Method with Computer Technology .................................................. 419
    Zelong Wang, Issei Harima, and Zenichiro Maekawa

A Study on Characteristic of Calligraphy Characters Part 2 Case of One Character of Calligraphy Letter “Kanji” and “Hiragana”.................. 429
    Zelong Wang, Mengyuan Liao, Kayo Yokota, Riichi Hagihara, and Zenichiro Maekawa

A Study on Characteristic of Calligraphy Characters Part 3 Case of the Writing Paper with Calligraphy Letter Works ......................... 437
    Zelong Wang, Riichi Hagihara, and Zenichiro Maekawa

Author Index ................................................................. 445
Digital Human Modeling: Applications in Health, Safety, Ergonomics and Risk Management: Ergonomics and Health
6th International Conference, DHM 2015, Held as Part of HCI International 2015, Los Angeles, CA, USA, August 2-7, 2015, Proceedings, Part II
Duffy, V.G. (Ed.)
2015, XXIII, 535 p. 300 illus., Softcover
ISBN: 978-3-319-21069-8