

Digital Human Modeling for Design and Engineering Conference and Exhibition

Technical Session Schedule

As of 05/28/2009 07:40 pm

Tuesday, June 9

Dynamics & Impact #1

Session Code: DHM1000

Room Västerhavet ABC

Session Time: 08:20

Section focuses on the modeling of human kinematics and related injury risks and/or tolerances. Papers cover subject areas including forces experienced by humans as both occupants and pedestrians within varying vehicle-based loading events.

Organizers - Brian M. Boggess, SEA Limited; Brian D. Corner, US Army Natick Soldier Center; Jingzhou (James) Yang, Texas Tech. Univ.

Time	Paper No.	Title
8:20 a.m.	2009-01-2261	A Multi-Modality Image Data Collection Protocol for Full Body Finite Element Model Development <i>Francis S. Gayzik, Craig A. Hamilton, Josh Tan, Wake Forest Univ. School of Medicine; Craig McNally, Stefan Duma, Virginia Tech; Kathleen Klinich, Univ of Michigan; Joel Stitzel, Wake Forest Univ School of Medicine</i>
8:40 a.m.	2009-01-2260	Characterization of Vehicle Occupant Compartment Material Properties Using MADYMO: Methodology and Validation <i>Dawn R. Freyder, Brian M. Boggess, Douglas R. Morr, Elaine K. Peterman, SEA Limited; William C. Bogatay, John F. Wiechel, Ohio State University</i>

Tuesday, June 9

Dynamics & Impact #2 (Development of Injury Criteria)

Session Code: DHM1100

Room Västerhavet ABC

Session Time: 10:20

Explore methods and applications of human body models for predicting and mitigating crash induced injuries.

Organizers - Brian D. Corner, US Army Natick Soldier Center; Bing Deng, Jenne-Tai Wang, General Motors Corp.

Time	Paper No.	Title
10:20 a.m.	2009-01-2263	A Study on Head Injury Risk in Car-to-Pedestrian Collisions using FE-Model <i>Jikuang Yang, SKLADV, Hunan University, China</i>
10:40 a.m.	2009-01-2262	Digital Elderly Human Body Modeling <i>Hyung Yun Choi, Hongik Univ.</i>
11:00 a.m.	2009-01-2264	Validation Study of a Generalized Minor Rear Vehicle Crash MADYMO Model Utilizing Real World Data <i>Adam J. Bartsch, Lars G. Gilbertson, Cleveland Clinic Spine Research Laboratory; Vikas Prakash, Case Western Reserve University; John F. Wiechel, The Ohio State University; SEA, Ltd.; Douglas R. Morr, Sea, Ltd.; Mutaz Shkoukani, TASS Americas</i>
11:20 a.m.	2009-01-2265	A Regional Finite Element Model of the Neck for Carotid Artery Injury Assessment in Farside Crash Configurations <i>Kerry A. Danelson, Wake Forest Univ. School of Medicine; Francis Gayzik, Wake Forest Univ School of Medicine; Mao Yu; Stefan Duma, Virginia Tech; Joel Stitzel, Wake Forest Univ School of Medicine</i>

11:40 a.m. **ORAL ONLY** **The construction of a digital human model to solve neck injury mechanisms during rollover**
Toshiaki Sakurai, Iwaki Meisei University

2009-01-2266 **Development of a Human FE Model with 3-D Geometry of Muscles and Lateral Impact Analysis for the Arm with Muscle Activity (Written Only - No Oral Presentation)**
Masami Iwamoto, Toyota Central R&D Labs Inc.

Tuesday, June 9

Product Interface

Session Code: **DHM800**

Room Västerhavet ABC

Session Time: **13:00**

This session presents the results of a number of studies involving the use of digital human models to study the interface between people and a wide range of different products and environments. A number of specific characteristics of the interactions between humans and their environment are presented, such as contact pressure, comfort, ease of ingress and egress, impact-type contact, as well as overall human capabilities in relationship to their work demands.

Organizers - *Sandra Metzler, SEA Limited; Xuguang Wang, INRETS*

Time	Paper No.	Title
1:00 p.m.	2009-01-2269	Assessment of a Safe Bumper System Using a Pedestrian Lower Limb FE Model <i>Jikuang Yang, Chalmers University of Technology, Sweden</i>
1:20 p.m.	2009-01-2268	Design of a Mock-up for Supported Ingress/Egress Using DHM <i>Olaf Sabbah, Albert Zaindl, Heiner Bubb, Lehrstuhl Fur Ergonomie</i>
1:40 p.m.	2009-01-2267	Biomechanical Evaluation of Headwear System Prototypes using Digital Human Modeling <i>Kent McKee, HumanSystems Inc.</i>
	2009-01-2271	Finite Element Analysis for the Interface of a Respirator and the Human Face-A Pilot Study (Written Only -- No Oral Presentation) <i>Jichang Dai, Texas Tech University; Jingzhou (James) Yang, Texas Tech. Univ.; Ziqing Zhuang, NIOSH</i>

Tuesday, June 9

Small Group Session

Session Code: **DHM1200**

Room Västerhavet ABC

Session Time: **15:20**

This session is set aside for those presentations that work best with one-on-one demonstrations, or high levels of audience interaction. Examples of such presentations might be software demonstrations or innovative adaptations of older tools to a new problem. Adequate space is provided for setup of computers or other devices, and sufficient time is allowed for the presenter to go through the presentation several times for different groups of participants.

Organizers - *Bruce Bradtmiller, Anthrotech Inc.; Brian D. Corner, US Army Natick Soldier Center*

Time	Paper No.	Title
	2009-01-2272	Derivation of a Geometrical Shape of the Upper Extremity of Children <i>Stephanie Holley, Stefanie Lochner, Steffen Peldschus, Matthias Graw MD, Ludwig Maximilian University</i>

2009-01-2273

Testing and Modeling of Elevator Door Retention During Hallway Applied Lateral Loads

John F. Wiechel, The Ohio State University; Elaine K. Peterman, Douglas R. Morr, Charles B. Tanner, Brian M. Boggess, SEA Limited; Andrew First, Ohio State University

2009-01-2274

Anthropometry for North American Manufacturing Population

Gopal Nadadur, Penn State Univ-University Park; Jim Chiang, Ford Motor Company; Matt Parkinson, Penn State Univ-University Park; Allison Stephens, Ford Automotive Operations

Wednesday, June 10

Applications #2

Session Code: DHM300

Room Västerhavet ABC

Session Time: 08:40

Human models are being applied to an increasing number of engineering design problems and processes, such as visibility, seat design, and manufacturing. This session emphasizes the application of human models, addressing how they are used in a variety of design challenges including: comfort, safety, performance, and efficiency in the design of ground vehicles, mining equipment, testing, assembly processes and products for universal use.

Organizers - Julie Charland, Dassault Systemes; Gregory R. Kopp, Caterpillar Inc.

Chairpersons - David Brouillette

Time	Paper No.	Title
8:40 a.m.	2009-01-2275	The Evaluation of Hose Insertion Tasks Using Digital Human Models Enrico Angelo Fiacco, Sandalwood Engineering and Ergonomics
9:00 a.m.	2009-01-2276	Relational Description to Parametric Evolution of Mudras

Dibakar Sen, Indian Institute of Science

Wednesday, June 10

Applications #1 (Pure Applications)

Session Code: DHM100

Room Västerhavet ABC

Session Time: 10:20

Human models are being applied to an increasing number of engineering design problems and processes, such as visibility, seat design, and manufacturing. This session emphasizes the application to human models, addressing how they are used in a variety of design challenges including: comfort, safety, performance, and efficiency in the design of ground vehicles, mining equipment, testing, assembly processes and products for universal use.

Organizers - Ralf Kaiser, BMW; John F. Wiechel, Ohio State Univ.

Time	Paper No.	Title
10:20 a.m.	2009-01-2280	Virtual Body Generator for Anthropometry and Physiology Based Modeling Patrick Wilkerson, Andrzej Przekwas PhD, Xianlian Zhou PhD, CFD Research Corp; Huaining Cheng, Air Force Research Lab; John Buhrman, US Air Force Research Laboratory
10:40 a.m.	ORAL ONLY	Digital Human Body Models for Accident Reconstruction Hyung Yun Choi, Hongik Univ.

11:00 a.m.	2009-01-2279	Simulating Complex Automotive Assembly Tasks using the HUMOSIM Framework Wei Zhou, Thomas Armstrong, Matthew Reed, University of Michigan; Suzanne Hoffman, Diana Wegner, General Motors
11:20 a.m.	2009-01-2278	The Optimal Design of Foot Rest Simulated by CATIA V5 Human Jeong Hoon Lee, Bo Kyung Kwon, Sung Chul Choi, Hyundai Motor Co
11:40 a.m.	2009-01-2281	A Study of Car Safety Performance in Side Impact Using Human Head FE model Jikuang Yang, SKLADV, Hunan University, China

Wednesday, June 10

Task Simulation

Session Code: DHM900

Room Västerhavet ABC

Session Time: 13:00

Human models are increasingly used to simulate complex tasks for visualization, training, or ergonomic analysis. This session presents experimental data and models addressing movement coordination, kinematic simulation, and dynamic analysis.

Organizers - Karim A. Abdel-Malek, Jasbir Arora, Rajankumar Bhatt, Univ. of Iowa; Matthew Reed, Univ. of Michigan

Time	Paper No.	Title
1:00 p.m.	2009-01-2285	Hand posture Prediction for Designing Position of Push-Button Switches on a Steering Wheel Natsuki Miyata, Masaaki Mochimaru, National Institute of Adv Ind Sci & Tech
1:20 p.m.	2009-01-2283	Biomechanical Discomfort Factors in Egress of Older Drivers Hyung Yun Choi, Hongik Univ.
1:40 p.m.	2009-01-2286	Inverse Dynamic Reconstruction of Truck Cabin Ingress/Egress Motions Gilles Monnier, Elodie Chateauroux, Xuguang Wang, INRETS; Christophe Roybin, Volvo 3P
2:00 p.m.	2009-01-2282	Modeling Ascending and Descending Stairs with the Human Motion Simulation Framework Matthew Reed, Univ. of Michigan
2:20 p.m.	2009-01-2284	Validation of the Human Motion Simulation Framework: Posture Prediction for Standing Object Transfer Tasks Wei Zhou, Matthew Reed, University of Michigan

Wednesday, June 10

Design Processes

Session Code: DHM700

Room Västerhavet ABC

Session Time: 15:20

This session will examine the use of various digital human models in the design process, as well as developments in the design of several digital human modeling applications and software. The papers presented encompass a number of different applications of digital human modeling, as well as several different industries and workplace environments.

Organizers - Michael E. LaFiandra, US Army; John Lockett, US Army Research Laboratory; Sandra Metzler, SEA Limited; Matt Parkinson, Penn State Univ-University Park

Time	Paper No.	Title
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3:20 p.m.	2009-01-2287	Early Risk Identification and Cost-Benefit Analyses through Ergonomics Simulation <i>Ann-Christine Falck, Chalmers University of Technology PPU; Roland Ortengren, Chalmers Univ of Technology; Dan Hogberg, Univ of Skovde</i>
3:40 p.m.	2009-01-2292	Digital Human Modeling Simulation Results and Their Outcomes in Reality: A Comparative Study within Manual Assembly of Automobiles <i>Roland Ortengren, Chalmers Univ. of Technology; Dan Lamkull, Volvo Car Corporation; Lars Hanson, Lund Univ</i>
4:00 p.m.	2009-01-2312	Integration of SCANIA Ergonomic Standard method into DELMIAs human activity analysis toolbox <i>Kerstin Johansen, Linkoping university</i>
4:20 p.m.	2009-01-2288	Increasing Functionality of DHM Software by Industry Specific Program Features <i>Dan Hogberg, Daniel Lundstrom , University of Skovde; Lars Hanson, Lund Univ.; Maria Warell , ArjoHuntleigh R&D Center</i>
4:40 p.m.	2009-01-2289	Biomechanical Analysis of a Complex Dynamic Task via Integrated Motion Capture and 3DSSPP <i>Dawn Freyder, Sandra Metzler, Nicholas Eiselstein, SEA Limited; John Greaves , Motion Analysis Inc</i>

Thursday, June 11

Cognition and Perception

Session Code: DHM400

Room Västerhavet ABC

Session Time: 08:00

Digital modeling of humans is not limited to consideration of physical performance. This session concerns the development and use of models of human information input, perception and cognitive processing. Modeling methodology is discussed in the context of analysis application with an underlying theme of predicting human response to design tradeoffs. The ultimate goal is a more complete representation of interactions between the mind and body.

Organizers - Thomas Alexander, FGAN; Brian D. Corner, US Army Natick Soldier Center; Michael E. LaFiandra, US Army; John Lockett, US Army Research Laboratory; Mark Thomas

Time	Paper No.	Title
8:00 a.m.	2009-01-2293	Human Error Analysis in a Military Multi Crew Application <i>Hakan Isci, STM</i>
8:20 a.m.	2009-01-2296	Vehicle Layout Conception Considering Vision Requirements <i>Alexander Mueller, Thomas Maier, Universitaet Stuttgart (IKTD)</i>
8:40 a.m.	2009-01-2294	Geometric Estimation of FOV for Vision Modeling in DHM <i>Vinayak, Dibakar Sen, Indian Institute of Science</i>
9:00 a.m.	2009-01-2295	Sight Analysis with 'RAMSIS Cognitive': Step II <i>Wolfram Remlinger, Heiner Bubb, Technische Universitaet Muenchen; Hans-Joachim Wirsching, Human Solutions GmbH</i>
	2009-01-2297	Prediction, Analysis and Modeling of Human Performance (Written Only -- No Oral Presentation) <i>Pawel Rzucidlo, Fatina Liliana Basmadji, Jan Gruszecki, Rzeszow University of Technology</i>

Thursday, June 11

Anthropometry

Session Code: DHM200

10:20

Room Västerhavet ABC

Session Time:

This session reveals latest state of the art with regards to human modeling and Anthropometry. Even more, this session also touches on biomechanic experiments and related modeling. The authors will present their results of R&D around the globe.

Organizers - Heiner Bubb, Technical Univ.; Brian D. Corner, US Army Natick Soldier Center; Aernout Oudenhuijzen, TNO; Sudhakar Rajulu, NASA Johnson Space Center

Time	Paper No.	Title
10:20 a.m.	2009-01-2299	The Body Silhouette: A New Data Processing Technique for Point Cloud Data Generated by a 3D Laser Body Scanner Terence Lerch, Central Michigan Univ; Dana Lynn Harder, Central Michigan University
10:40 a.m.	2009-01-2298	Statistical Approach to a Model-based Anthropometry Description Florian Engstler, Lehrstuhl Fur Ergonomie; Tulin Gunduz Cengiz, Uludag Univ; Olaf Sabbah, Heiner Bubb, Lehrstuhl Fur Ergonomie
11:00 a.m.	2009-01-2301	Estimation of Mass and Inertia Properties of Human Body Segments for Physics-based Human Modeling and Simulation Applications Rajeev Penmatsa; Carl Fruehan, Kimberly Farrell, Uday Verma, Univ of Iowa; Rajankumar Bhatt, Univ. of Iowa; Brent Rochambeau, Univ of Iowa; Steve Beck; Karim Abdel-Malek, Univ of Iowa
11:20 a.m.	2009-01-2300	Arrangement of Functional Joint Rotation Centers for the Whole Body Digital Manikin in Proportion to a Set of Body Dimensions Kei Aoki, National Institute of Adv Ind. Sci & Tech.; Makiko Kouchi, Masaaki Mochimaru, National Institute of Adv Ind Sci & Tech
11:40 a.m.	2009-01-2302	Effect of Head and Neck Anthropometry on the Normal Range of Motion of the Cervical Spine of Prepubescent Children Janet M. Brelin-Fornari, Kettering Univ.; Terri Lynch-Caris, Kettering Univ; Karl Majeske, Oakland University

Thursday, June 11

Biomechanics

Session Code: DHM600

Room Västerhavet ABC

Session Time: 13:00

Explore methods of human joint modeling, motion & posture prediction, posture maintenance and impact simulation for reducing traumatic injuries and musculoskeletal disorders.

Organizers - Riender Happee, Delft Univ. of Technology; Hongwei Hsiao, NIOSH; Michael E. LaFiandra, US Army

Time	Paper No.	Title
1:00 p.m.	2009-01-2303	Posture Prediction Validation Using Inverse Kinematics Salam F. Rahmatalla, Univ. of Iowa
1:20 p.m.	2009-01-2304	Posture Maintenance of the Human Neck Riender Happee, Delft Univ. of Technology
1:40 p.m.	2009-01-2307	The Handling of Non-Uniform Parts and Peak Hand Forces Allison Stephens, Ford Automotive Operations; Jim Chiang, Ford Motor Company; Enrico Fiacco, Sandalwood Enterprises Inc; Mardy B. Frazer, Sandalwood

- 2:00 p.m.** **2009-01-2305** **Real-Time Obstacle Avoidance for Posture Prediction**
Ross Johnson; Brian Lewis Smith, Virtual Soldier Research; Tim Marler, Karim Abdel-Malek, Univ of Iowa
- 2:20 p.m.** **2009-01-2306** **A Novel Model-Based Predictive Controller for Human Motion Simulation in Dynamic Environments**
Faisal Goussous, Univ. of Iowa; Karim Abdel-Malek, Rajankumar Bhatt, Univ of Iowa; Soura DASGUPTA , Univ. of Iowa

Thursday, June 11

Posture and Comfort

Session Code: **DHM500**

Room Västerhavet ABC

Session Time: **15:20**

This session will analyze models of the biomechanical phenomena that influence the perception of comfort and of the biomechanical and perceptual basis of posture. It will explore how these models operate, how they are created, how their output should be analyzed properly, and their benefits.

Organizers - *Rajankumar Bhatt, Univ. of Iowa; Terry Robert O'Bannon, Lear Corp.; Jan P. Petzel, Leggett & Platt Inc.; John F. Wiechel, The Ohio State University*

Time	Paper No.	Title
3:20 p.m.	2009-01-2308	Formulation of the Degree of Postural Instability Based on the COP and EMG Data <i>Tsuneo Kawano, Setsunan Univ.; Yutaka Fukui, Nobuhiro Sugimura, Osaka Prefecture Univ.</i>
3:40 p.m.	ORAL ONLY	Training Safework for Realistic Position and Posture in an F16. <i>Aernout Oudenhuijzen, TNO; Gregory Zehner, US Air Force; Jeffrey Hudson, Infoscitex</i>
4:00 p.m.	2009-01-2309	Dynamic Analysis of Car Ingress/egress Movement: an Experimental Protocol and Preliminary Results <i>Julien Causse, INRETS/Peugeot Citroen Automobiles SA; Elodie Chateauroux, Gilles Monnier, Xuguang Wang, INRETS; Lisa Denninger, Peugeot Citroen Automobiles SA</i>
4:20 p.m.	2009-01-2311	CASIMIR Automotive: A Software for the Virtual Assessment of Static and Dynamic Seating Comfort <i>Alexander Siefert, Woelfel Beratende Ingenieure GmbH & Co.</i>
4:40 p.m.	2009-01-2310	Using Designing for Human Variability to Optimize Aircraft Seat Layout <i>Gopal Nadadur, Matt Parkinson, Penn State Univ-University Park</i>