
Introduction

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Ergonomic evaluation of a product often requires building a physical mock-up or prototype, having a group of experts or a representative sample of users test it, and then provide an assessment of discomfort and ease of use. This is an expensive and time-consuming process especially when the product design has to be modified and re-validated. Digital mock-ups (DMU) together with digital human models (DHM), are increasingly used in the early phase of product design in order to reduce the product development time and cost. In order to evaluate a product or workplace, the digital human should ideally behave like a real human being, not only in terms of anthropometry and biomechanics, but also in terms of motion, discomfort, attention and perception, and occupational injury. The First International Symposium on Digital Human Modeling (DHM2011) was held in Lyon, 14–16 June 2011, with the support of the Technical Committee on Human Simulation and Virtual Environment of the International Ergonomics Association (IEA). The main objective of this symposium was to provide a unique opportunity for researchers, software editors and end-users to share most recent R&D results and DHM experience. About 140 persons from 16 different countries participated in the conference. Sixty-three papers were included in the conference proceedings, covering the following topics:

- advanced biomechanical models
- anthropometry and human functional data
- motion capture and reconstruction
- motor control and cognitive perception
- posture and motion analysis for ergonomic assessment

- posture and motion simulation
- DHM applications.

The details of this symposium can be found in the website: <http://iea-dhm2011.univ-lyon1.fr>.

This special issue aims to publish most significant papers of this symposium. Seven papers were selected by the scientific committee composed of more than 30 most active DHM researchers and end-users. Based on conference abstracts, authors were asked to extend them to full journal papers. Normal peer review process was also applied to ensure their quality. We hope that these selected papers give an overview of current status of DHM related researches and applications.