Anthropometric human models are useful especially when treating static layout problems. Animation tools normally are used to visualize working processes, but not for changing the hardware design of a working place. Questions about forces applied by humans can presently be answered only by the help of paper and pencil procedures. Even if such procedures exist in a software version, they remain appendages to the existing geometrical orientated modeling programs. Within the research project `RAMSIS-dynamic`, which was supported by BMW, new models have been developed for force, posture, and motion prediction based on experimental data. The procedure predicting the maximum forces uses calculated torque-ellipsoids. Dependencies of posture, gender and age are also considered in this model. For the posture prediction model the assumption is made that people try to minimize the ratio between necessary and maximum torque over all joints of their body. The resulting torque can be measured using a specially designed device. Additionally a model simulating target orientated motions of the limbs with low dynamic forces has been developed. This model considers some important factors like visual behavior, obstacle avoidance and different grasping modes. The three models were evaluated by comparison with real observed forces, postures and movements.
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