

POLITECHNIKA ŚLĄSKA W GLIWICACH
WYDZIAŁ MECHANICZNY TECHNOLOGICZNY

Instytut Mechaniki i Inżynierii Obliczeniowej

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***Komputerowe wspomaganie diagnostyki i oceny postępu
rehabilitacji ręki człowieka***

Rozprawa doktorska

Promotor:

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Streszczenie w języku angielskim

This PhD thesis describes the development of a mathematical model of the human hand, especially: distal, middle, proximal phalanges, metacarpal and wrist of the index, middle, ring and small finger, using a planar multibody formulation with natural coordinates. The multibody model correctly describes the motion and inertial characteristics of the hand. The position and orientation of the anatomical segments are presented using the Cartesian coordinates of points located in relevant anatomical landmarks of the hand, such as joints and extremities. Two computational codes were developed in Matlab program. The results obtained present biomechanical relevance and can be compared with results obtained from Arduino platform. All those results can be used for computer-aided diagnosis and assessment of progress of human hand rehabilitation.