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NEW FIELD OF APPLICATION OF MOTION CAPTURE: ANALYSIS OF THE PROPER PERFORMANCE OF SWORD FENCING IN THE FIELD OF HISTORICAL EUROPEAN MARTIAL ARTS (HEMA)

Abstract:

Main attention has been focused on discipline longsword fencing, which has been experiencing rising popularity since the 1990s. Historical European Martial Arts (HEMA) focuses mostly on reenacting fighting styles of Late Middle Ages and Renaissance. The main reason for this is a lack of complete documentation for earlier periods and without proper treatises. For this research movements were analysed of master strikes such as :

Zornhau (Strike of Wrath)

Schielhau (Squinting Strike)

Zwerchhau (Cross Strike)

Krumphau (Crooked Strike)

Scheitelhau (Crown Strike)

In this research, obtained *motion capture* data and analyzed the pattern of the correct strikes, which they compared with the movements of fencing amateurs. The results were analyzed and a way to improve the classification algorithm was proposed.

The main task was to measure the precision of movement while performing five different fencing strokes. Each of the movements was recorded with 39 special full-body plug-in gait markers, designed for medical applications. The muscle activity during exercise was measured with 16 EMG electrodes. Moreover, there were 30 cameras and 3 video recorders engaged.

The number of participants has limited to four students at Wrocław University of Science and Technology (WUST) Lab and 15 in Centre of Polish-Japanese Academy of Information Technology (CBR PJATK R&D).