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Measurement of the flexible bending force of the index and middle fingers for virtual interaction

Abstract

In this paper the development of a new low cost dataglove based on fingertip bending tracking techniques for measuring the fingers bending on various virtual interaction activities is presented as an alternative to the rehabilitation services enhancement in the betterment of the quality of life especially for the disabled person. The purpose of the research is to design a flexible control for measurement study of virtual interaction of index and middle fingers that are important in a variety of contexts as well as the deterministic approach. These analyses of fingers flexing of the system were using the flexible bend sensor functioning as a key intermediate of the process to track the fingertip positions and orientations. The main propose of the low cost dataglove is to provide natural input control of interaction in virtual, multimodal and tele-presence environments as an input devices provide as they can monitor the dexterity and flexibility characteristics of the human hand motion. Preliminary experimental results have shown that the dataglove capable to measure several human Degree of Freedom (DoF), “translating” them into commands for the interaction in the virtual world.

Keywords — Dataglove, virtual interaction, rehabilitation services enhancement, grip force, flexible control