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Design of Digital Gloves with Feedback for VR

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Abstract

© 2018 IEEE. This article describes the first steps in the development of a low-cost digital sensory glove that designed for use in virtual reality systems especially. Existing concepts of gloves differ in features and design, they have various functions, including feedback, tactile feedback to the electric discharge, a feeling of finger bending, finger grip strength and prediction of action and three-dimensional spatial positioning - to improve sensation and practical experience in virtual reality. Manual dynamic perception and freedom of action, common in the real world, provide instant information about objects in the virtual world. Digital gloves act not only as a remote control in VR, but also provide physical feedback for the user when they come in contact with virtual objects. This article presented an own design for inexpensive gloves that allow for proximal and distal finger joint movements, as well as position/orientation determination with an inertial measuring unit. These sensors and tactile feedback caused by the vibration patterns of the coins at the fingertips are integrated into a wireless, easy-to-use and open-source system. The design of hardware, as well as experiment plans for proof of concept, is presented.

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