Virtual Interface with Kinect 3D Sensor for interaction of bedridden people
Master in Electronic Engineering and Computer

José Luís Oliveira Eusébio

Instituto Politécnico do Cávado e do Ave

1ST SYMPOSIUM OF APPLIED RESEARCH

BACKGROUND

The man-machine interaction has evolved a lot in last years, to the point that now open up a range of opportunities for people who have a certain type of limitation. The development of natural and intuitive interaction techniques, called Natural User Interface (NUI) allow today that people who are bedridden and/or physical disability can perform a set of actions by gestures, thus increasing their quality life.

OBJECTIVES

The implemented solution is based on image processing and computer vision through Kinect 3D sensor and is a natural interface without touch to the development of an application to recognize gestures made by a human hand. Gestures identified by software application trigger a set of actions that make sense for a bedridden person, for example, trigger the emergency, turn on or turn off the TV or control the bed slope.

METHODOLOGY

For the development of this project was initially a research work on the important technologies considered. After the system configuration, was obtained the first Kinect data to understand and convert it into an appropriate format for your further treatment. The next step was the hand segmentation, which was a stage with advances and retreats until find a satisfactory algorithm. Then it was choosen a suitable technique for making the gesture recognition. The opting for a matching technique for gesture recognition has taken into account the amount of gestures (only six). Finally the system was simulated with a Arduino.

RESULTS AND CONCLUSIONS

The results obtained are satisfactory, being above 90% of valid results. The health and welfare needs of systems that improve the quality of life of bedridden people, taking that into account, the prototype makes sense.

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CONTACTS

Email1

Email2

Email3