Nursing Self-Training System

Recently, it is required more and more nursing care service, as the seriousness of aging problem is increasing. However, the requirement is prevented by the shortage of nursing teachers. One way of solving this problem, is to provide a self-training system which is able to automatically measure the performance of the trainee and provide the evaluation results as almost the same precision with the nursing teachers' (Fig.1).

In the research, we forced on patient transfer and bed making which are the fundamental and the heavy nursing tasks (Fig. 2). In the proposed system, the Kinect sensors (Microsoft co., Ltd.) which are able to provide color and depth images are applied. The trainee's performances, such as posture, body joints' spatial positions and the bed's state were measured by the combining with color and depth data. The system evaluated the trainees' performance in each evaluation items by indicating right or wrong. Then trainees are able to correct their error performance by reviewing the system's evaluation results and the demo video.

The performance of the system is examined by the controlled trials. The average accuracy of the system's evaluation results was 81.4% in patient transfer training and 80.0% in bed making training. In addition, Fig. 4 depicted the training effectiveness of patient transfer.

Keywords: Self-training system, Nursing skills, Skill Evaluation, Kinect sensor

Reference

[1] Z. Huang, A. Nagata, M. Kanai-Pak, J. Maeda, Y. Kitajima, M. Nakamura, K. Aida, N. Kuwahara, T. Ogata and J. Ota, Posture Study for Self-training System of Patient Transfer. In Proceedings of IEEE International Conference Robotics and Biomimetics (ROBIO2012), 842/847, (2012).

[2] Ayanori Nagata, Z. Huang, M. Kanai-Pak, J. Maeda, Y. Kitajima, M. Nakamura, K. Aida, N. Kuwahara, T. Ogata and J. Ota, Supporting System for Self Training of Bed-Making Using Image Processing with Color and Distance Information, In Proceedings of IEEE International Conference Robotics and Biomimetics (ROBIO2012), 2102/2107, (2012).
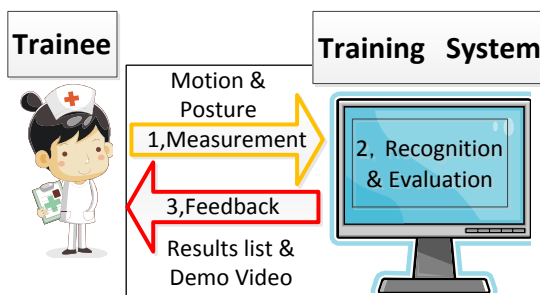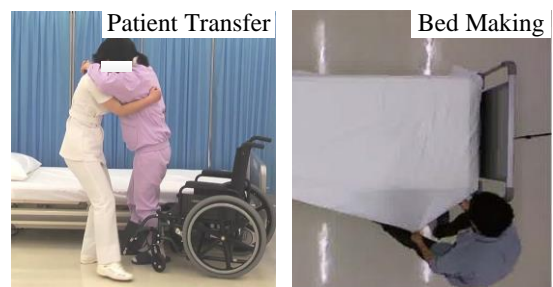
Fig.1 System Image
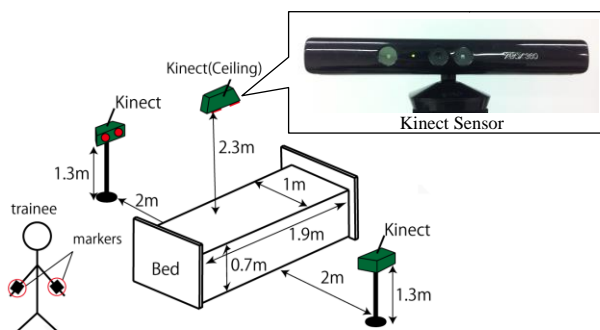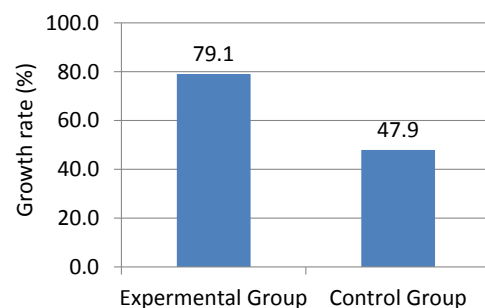

Fig.2 Patient transfer and bed making

Fig.3 Camera system

Fig.4 Comparison of training effectiveness