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| Image and Video Processing Lab, The Chinese University of Hong Kong   1. **Introduction**   As illustrated in Figure 1 and the demo video, the system can track the 3D head position and pose in real-time. As using 3D face template, eye positions are also provided by the system. Therefore, the system can be used as a natural human computer interface in many attractive applications. For example, it can be applied in gaming or free-viewpoint video to provide user viewpoints; it can be used to control cursor with head motion, which will facilitate people with disabled arms; it can serve as a preprocessing step for free-head-movements gaze estimation, and so on.  **D:\Studying\My papers\ICVS2013\llncs2e\fig2.jpg**  Figure 1. Some tracking results.   1. **Framework**   A 3D face model is constructed for the user offline which is then segmented manually to exclude regions that typically exhibit strong deformations. The model is registered to the 3D point cloud captured by Kinect using the iterative closest point (ICP) algorithm. Either face detection or head movement prediction is used to provide initialization result for ICP, depending on whether or not the previous tracking results are available.    Figure 2. System framework.  We proposed a novel method to train head movement predictors. We name this method as “K-means” like training to emphasize its similarity with the K-means clustering algorithm. It automatically clusters the training data into K groups and trains K predictors, respectively. Details can be found in the [1]. (PDF will be available on our website if the paper is accepted.)   1. **Group member**  * Post doctoral fellow: Dr. LI Songnan ([snli@ee.cuhk.edu.hk](mailto:snli@ee.cuhk.edu.hk)) * Supervisor: Prof. NGAN King Ngi ([knngan@ee.cuhk.edu.hk](mailto:knngan@ee.cuhk.edu.hk)) * PhD student: Mr. SHENG Lu ([lsheng@ee.cuhk.edu.hk](mailto:lsheng@ee.cuhk.edu.hk))  1. **Publication**   [1] Songnan Li, King Ngi Ngan, Lu Sheng, “A Head Tracking System using RGB-D Camera”, ICVS2013 (under review) |