Authentication Based on Hand Movement by Low Dimensional Space Representation

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Abstract : Most biological methods for authentication require special equipment and, some of them are easy to fake. We proposed a method for authentication based on hand movement while typing a sentence with a regular camera. This technique uses the full video of the hand, which is harder to fake. In the first phase, we tracked the hand joints in each frame. Next, we represented a single frame for each individual using our Pose Agnostic Rotation and Movement (PARM) dimensional space. Then, we indicated a full video of hand movement in a fixed low dimensional space using this method: Fixed Dimension Video by Interpolation Statistics (FDVIS). Finally, we identified each individual in the FDVIS representation using unsupervised clustering and supervised methods. Accuracy exceeds 96% for 80 individuals by using supervised KNN.