

# Creating and interacting with realistic avatar based on Data Glove and Haptic Tactile

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## Abstract

In this paper, we propose an interactive ways to interact with realistic avatar and perceive the avatar emotional response through 5DT glove and haptic tactile devices. Hence, we have created facial expression of avatar and synchronize with tactile frequency. The classification of vibration range is based on color intensity that refers to the emotion value implied by color theory and circumplex 2D model. During the initiate usability testing, we achieve about 77% user give strong and very strong impression that our proposed solution gives stronger emotional expression compared to Alfred systems while only 15 % user give average respond and around 8% users said that our proposed solution provide a small impression. The user on questionnaire said that our method is better than Alfred in term of avatar emotional expression. We expected this finding will become key features for future avatar on game and virtual reality.

### Categories and Subject Descriptors

H.5.2 [Information Interface and Presentation]:  
Multimedia Information Systems - animations, audio input/output,  
augmented, and virtual realities

### Keywords

Avatar, Facial Animation, Emotion, vibration, virtual reality

## Avatar Perfection

The previous studies are lacking on presence in term of virtual human. It can be caused by several factor such as: the complexity of virtual human model itself, emotional expression, incoherent animation reaction (Alejandra, a et al. 2008). Firstly, we classify the emotion into particular vibration then synchronize with facial expression.

## Proposed Approach

According to (Yuki and Hiroyuki 2008), vibration range which is able to be acknowledging by human around 1Hz- 1KHz. They also described that vibration on frequency 300 below is consider as smooth object or joy feeling. In term of color, red color has properties (R:255;G:0-255;B:0-255; Hue:0;Saturation:0-100; Value: 100). High vibration in long duration usually will cause people uncomfortable feeling, angry, frustrated and other negative

feeling, while low vibration can cause relax, joy and even enthusiasm emotion (Griffin 1990; Yuki and Hiroyuki 2008). Based on this finding we have mapping haptic device frequencies (1-1000 Hz) into 1-255 (RGB value). We also tried to recall student of their experience in angry states record their heart beat.



Figure 1: Testing result

The avatar is facilitated with vibration feature and facial expression. Our mapping methods are acceptable to users due to user able to tell what kind emotion that presented by certain vibration. In future, we believe that this new approach will enhance presence of avatar in overall aspect like virtual reality, game or even serious game. For example on fighting game, the players will able to feel their opponent getting angrier through the vibration of the joystick that they hold

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