

Mining Emotion in Virtual Environments

The Sensory Environments Evaluation (SEE) program is investigating a design methodology for the objective measure of emotional response in virtual environments. Through the use of physiological, behavioral, and retention instruments, the SEE program is developing a process that will augment current methods available to researchers for evaluating presence in such environments.

Initial tests of this design methodology are ongoing in SEE’s prototype environment, DarkCon. Depicted here is an example of the process as it applies to the evaluation of the emotionally-salient variable (printing) and the corroborative measures which may yield increased understanding of emotional response in terms of arousal state.

1. Meditation & Baselines
After ensuring a closed-off room, demographic survey, visual acuity and immersive sensory questionnaire, a participant in DarkCon’s workshop with a physiological reader and a head-mounted display. A resting baseline for heart rate and skin-conductance response (SCR) is recorded, and the participant is then divided into a series of exercises within a virtual immersive virtual environment. The tests challenge the participant to answer the following questions: How do you think you would like to see the environment? What do you expect to experience? How do you feel about the experience? After answering these questions, the participant is asked to answer a series of additional questions: physiological arousal level, subjective experience, and the participant’s emotional state.

2. Priming & Agency
During this part, the influence of the emotionally-salient variable (printing) and the participant’s affective response to the emotional variable are measured. The participant is asked to answer a series of questions related to their emotional state, such as how they feel about the experience, and the participant’s emotional state is assessed.

3. Stimuli & Arousal
The multisensory state of DarkCon has been designed to present a range of psychological stimuli that are designed to elicit emotional responses. The participant is then asked to rate their emotional state on a scale from 1 to 10.

4. Behavior
In order to determine whether the emotional state is maintained, the participant is asked to answer a series of questions related to their emotional state, such as how they feel about the experience, and the participant’s emotional state is assessed.

5. Recall & Presence
Once the experiment is complete, the participant is asked to rate their emotional state on a scale from 1 to 10.

6. Data Synthesis
The data obtained from the experiment is analyzed to determine the emotional response of the participant to the emotional stimuli. The data is then analyzed to determine the emotional response of the participant to the emotional stimuli.

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