Designing Affective Games Using Psychophysiological Input

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- Brain Waves
- Frequencies
- Alpha: 8-14Hz

EEG

- Facial Muscles
- Valence
- Other Muscles

EMG

- Arousal
- Indirect input
- Signal decay

EDA/GSR

- Fixations
- Saccades
- Pupil diameter

Eye Tracking

- Thresholds
- Heat influence
- Weather

Temperature

- Direct control
- Enemy size
- Consistent

Respiration

Goal of this study
We are investigating the optimal game mechanics and designs for using a player’s cognitive and/or emotional state to control a game.

Development
- XNA Game
- Sprite GFX
- SensorLib
- TT API

Game
- Signal input
- Affective
- Mechanics
- Aid Controls

Design
- In-/direct controls
- Perceptibility
- Latency

Biosuit feature
- The affective game features a biosuit (indicated by an extra progress bar), which refills player health when not in combat
- When relaxed (low EDA/SCL) the biosuit regenerates

Enemy target size feature
- Enemies in the game can adjust their sprite size spontaneously, so they are easier to target when shooting
- The respiration sensor (breathing) controls the target size

Particle convolution (weather) feature
- On-screen particle amount (e.g., snow) can increase to make game controls more difficult
- Particle amount is controlled by the temperature sensor

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