ANIMA:
Adaptive Neurological Interface for Multimodal Applications

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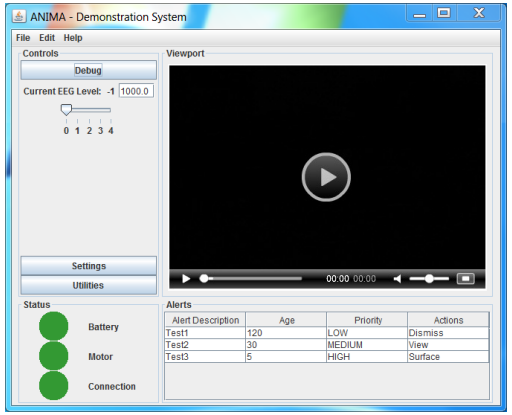
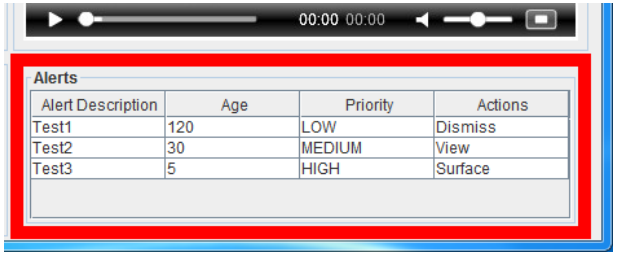
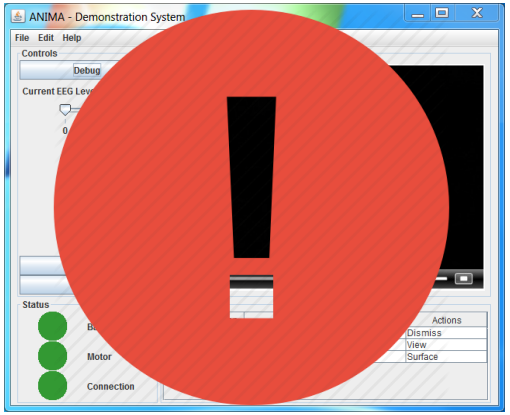
ANIMA - Overview







ANIMA uses a minimally invasive sensor to detect the attention levels of the user and adapts dynamically to return focus to the areas of the interface that require it.

ANIMA - Implementation

Start

The Administrator initializes the sensors and launches the ANIMA display.

Administrator

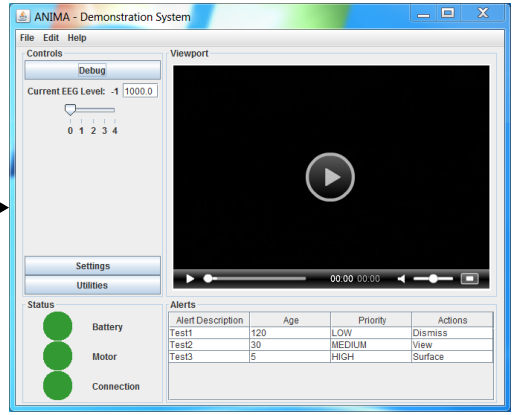
Sensor Listener Interface

Live data is streamed through the EEG adapter into the Administrator, which generates an aggregate “Attention Level” from available data streams.

If the user’s attention has lapsed, the frame will start a timer thread to track the duration of lapse.

Alert Timer

ANIMA Frame



As attention lapses, the frame will enable increasingly severe restoration strategies until the level has been restored, at which point the display is restored.

ANIMA – Intervention Strategies

ANIMA – Additional Features

- Configurable
  - ANIMA provides the ability to set a number of important features such as key window, alert color, and personal “neutral” EEG level
- Flexible
  - A robust architecture scales well to additional sensors and more complicated attention algorithms through the use of Java Interfaces, decoupled design, and listeners.
- Relevant
  - Research into attention management is actively being pursued and funded by organizations such as DARPA, AFRL, and Universities like Drexel

BACKUP

ANIMA - Overview

- Purpose
  - Use a minimally invasive sensor to detect the attention levels of the user and adapt dynamically to return focus to the areas of the interface that require it.
  - Demonstrate an attention management system that dynamically modifies the UI to attract a user that has “zoned out”
- Users
  - Designed for workers whose jobs require long periods of visual attention where distraction can be costly or fatal (pilots/surgeons).
  - Primarily used by high and low education working adults who are not necessary fluent in computer use and may be colorblind.
- Goals
  - To quickly capture attention lapses to maintain focus on high priority tasks