COGS 189 Final Project

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NeuroSky Features:

- Attention Level
    - Increases when a use focuses on a single thought or an external object, and decreases when distracted
    - Value Range: 0 - 100
- Meditation Level
    - Increases when users relax the mind and decreases when they are uneasy or stressed
    - Value Range: 0 - 100
- Blink Detection
    - A higher number indicates a “stronger” blink, vice versa

Description:

A distractive working environment and a overly-exhausted mind can greatly undermine out productivity, but we are often unaware of these factors during work. In our final project, we want to create a system that designs an optimal environment and plan for people by recognizing their mental states during work. Our goal is to use EEG potentials to determine whether the user is in a stressful and unproductive working state and provide them constructive/real-time feedback so that they can be more efficient. In addition, we provide mini-games for them to play and relax after working for a long time.

Here are some of the functions and implementations we want to consider:

- Turn off the facebook and email notifications when the user is highly focused on work.
- Provide incentives when users are constantly concentrated (i.e. planting plants or awarding points for leaderboard)
- Pop up window to the user to take a break when the attention level is low and the meditation level is low

Methods:
We plan to use Neurosky to record the EEG signals from users while they are working and adjust the study environment based on their attention level, meditation level, and blink detection.

Programming Implementation

- We will use C++ to call the APIs from Neurosky to obtain data from the headset
- We will provide a terminal-friendly interaction pane for the user to interact with and see the data we provide.
- Our program will provide three functionalities:
    - Entertainment:
        - Some mini leaderboard-based games for users to relax after they have studied for a while (i.e. Leaderboard for amount of time staying focused, leaderboard for amount of time keeping relaxed)
    - Study-Mode:
        - Provide incentives when users are constantly concentrated (i.e. planting plants or awarding points for leaderboard)
        - Prompt user to take a break if a pattern of inefficiency is seen
    - Real-time visualization:
        - Simply provide them the real-time feedback of how their current meditation and attention levels are, in addition to blink detection.