Use of Augmented Reality in Improving Student Study Habits

Team SegFault: Crystal Conroy, Brian Phillips, Marc Bolinas

Problem Statement

- Many college students struggle with good study habits
- Up to 10% of college students struggle with concentrating when studying [1]
- Many struggle with concentrating for more than fifteen minutes at a time [2]
- Our goal:
  - Help college students improve their study habits by tracking their concentration and by eliminating distractions
  - This will be done using augmented reality

Need Finding

- Survey
  - After finishing our prototype we will send out a picture of it with a survey link to a wide pool of participants so they can give feedback on our idea
- Sample Survey Protocol
  - Our goal is to get as many participants from undergraduate students at the University of Delaware as possible
- Participants
  - We want to improve the study habits of all college students
  - We’re not looking at one specific group
- Interviews
  - A handful of students taken from the pool of those surveyed will be interviewed on their study habits and what impedes their studying

Prototyping

- Storyboarding
  - The initial prototype will be a storyboard detailing how the device will be used and what screens users will see based on certain situations
  - It’s simplicity will make changes easy
- Digital mockups
  - Basic mockups to show the user interface as seen through the AR headset
- Fidelity
  - Low-fidelity in regards to depth, as any working implementation would require many hours working with computer vision and gaze tracking

Implementation

- Technology
  - AR headset
  - Python for general machine learning, image recognition, and eye tracking
  - Unity
  - Standard 2D rendering, such as generic CSS, for the interface
- Features
  - Eye tracking
  - Object recognition
  - Detect when user is distracted
  - Recommend study breaks
- Challenges
  - Image recognition and eye tracking
  - Headsets may be uncomfortable for users

Prototype Evaluation

- Our hypothesis
  - If our augmented-reality application improves how efficiently students study, then these students will retain a higher percentage of information when they study using our system compared to when they do not use any system
- Baseline
  - The baseline will be students studying for a specified period of time with no help from our system
- Experiment setup
  - Two different conditions: the baseline, and with the system on
    - The headset will remain on for both conditions to remove any confounding variables
  - Between-subjects, compare information retention between the two conditions, get feedback from participants

Timeline and Deliverables

- Create prototype (Crystal, Marc, Brian): 11/8/19
- Send out survey, conduct interviews (Crystal, Marc, Brian): 11/9/19
- Update prototype based on results (Crystal, Marc, Brian): 11/13/19
- Implement eye tracking (Crystal): 11/22/19
- Implement object recognition (Marc): 11/22/19
- Implement AR interface (Brian): 11/22/19
- Create website (Crystal, Marc, Brian): 12/3/19
- Final presentations (Crystal, Marc, Brian): 12/5/19

References

[1] Concentration Tips for College Students. (2018, January 11). Retrieved November 3, 2019, from https://www.collegeatlas.org/concentration-tips.html.

[2] Thompson, V. (2017, November 21). Losing Focus in College. Retrieved November 3, 2019, from https://education.seattlepi.com/losing-focus-college-1583.html.

Questions?