

Feedback for Projects Proposals #1

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Group Project 1

Chilly

Nelson Hidalgo, Serena Bono, Sneha Arvind

Idea: [Provide a summary of your concept]

Comments:

- Pattie: Think more about your hypotheses and how they relate to the experiment design? What are your hypotheses? Test one of them at a time rather than many all at once:
 - Is the hypothesis that vagus nerve stimulation specifically is superior/important, rather than any stimulation at any part of the body (to draw a person's awareness/attention to the current moment)? Why is this a good hypothesis? What is the theory of the vagus nerve and how it relates to interoception?
 - Is cold temperature specifically important, or can another form of stimulation be equally impactful? Does cold make the vagus nerve more or less active? Does cold increase/decrease the sensation of hunger? There is probably literature on this you can look at to come up with a well informed hypothesis
 - Focus on one: temperature or biofeedback.
- Nathan: It might be better to choose one of the features and design a study to test that. Interesting question to explore – Does vagus nerve stim improve interoceptivity?

Group Project 2

Check. On

Maria and Cyrus

Idea: [Provide a summary of your concept]

Comments:

- Unrealistic to achieve all of this by week 13 of class? Please reduce scope.
- Pattie: Use as control an existing chatbot system. Focus on just adding one new element/feature, e.g., increased personalization/customization and test whether that makes it more effective, more preferred, etc.
- Experimental condition: customized/personalized chatbot.
- Do not attempt to work on improving diagnosis *and* intervention. Pick 1 to focus on

Group Project 3

Theater Neuroscience Buddhism

Inspiration:

- Chanting & mindfulness
- Theater & neuroscience (theater as tool to explore cognition)

Ideas/suggestions:

- Device that based on physiological data overwrites the media (eg TikTok videos) being served to protect the person
- You mentioned using EEG, but maybe use EDA instead (electrodermal activity also called skin conductance; which is sort of a measure of how “aroused” (positively or negatively) a person is
- Maybe start by just measuring EDA and HR and measure how it correlates with videos being shown on Tiktok,
- Then experiment with increasing/decreasing EDA based on choice of video served
- Take a look at company Affectiva which evaluates people’s responses to videos/ads
- What hardware will you need?

Group Project 4

Improving affect recognition in individuals with impaired emotion processing

Erick, Arielle, Riley

Proposal:

- do automatic detection of facial expressions, provide those to impaired people
- For training or as permanent aid

Comments:

- There is some prior work and products. Make sure to research them and make sure to articulate what is new/different in your project, e.g.,
 - <https://www.deepar.ai/emotion-detection>
 - <https://www.nature.com/articles/s41598-023-43135-5>
 - <https://autismglass.stanford.edu/> +1 (Nelson)
- Which experiment or evaluation do you plan?
- What hardware do you need? There are smart glasses with camera and some also have speakers; I would not build that from scratch. Talk to Cayden Pierce (cayden@media.mit.edu) in Pattie’s group who knows a lot about various smart glasses

- Nelson: would be interesting to make it a 2-way service where the neurotypical (NT) conversation partner is told what the emotion of the autistic person is, as they do not express their emotions the same way
- Nathan: suggestion to read more about what the problem is for autistic people. Is it that they don't recognize emotions or is it that they do not respond to emotions of others the way NTs do? Will giving them the information about the state of the other person help them?