Explore — Impact of Computing Innovations
Written Response Submission Template

Submission Requirements

2. Written Responses

Submit one PDF document in which you respond directly to each prompt. Clearly label your responses **2a–2e in order.** Your responses must provide evidence of the extensive knowledge you have developed about your chosen computing innovation and its impact(s). Write your responses so they would be understandable to someone who is not familiar with the computing innovation. Include citations, as applicable, within your written responses. **Your response to the first four prompts (2a–2d) combined must not exceed 700 words.**

Computational Artifact

2a. Provide information on your computing innovation and computational artifact.

- Name the computing innovation that is represented by your computational artifact.
- Describe the computing innovation's intended purpose and function.
- Describe how your computational artifact illustrates, represents or explains the computing innovation's intended purpose, its function or its effect.

(Approximately 100 words)

Insert response for 2a in the text box below.

My computational artifact represents the EQ Radio. The EQ Radio is a device designed by MIT students to determine what kind of emotion someone is feeling, even if they are attempting to hide it[3]. In my picture, the EQ Radio[4] can be seen bouncing wireless signals[5] off of the patient's body[5] and using reflected signals to deduce their heart rate, breathing patterns, and other factors that are symptomatic of certain emotions[4]. Then, it compares the data it has gathered on this patient with the data gathered about other patients to fine tune its result and be more accurate.

2b. Describe your development process, explicitly identifying the computing tools and techniques you used to create your artifact. Your description must be detailed enough so that a person unfamiliar with those tools and techniques will understand your process.

(Approximately 100 words)

Insert response for 2b in the text box below.

To create my computational artifact representing the EQ Radio, I used the program Microsoft Paint on my school's computers. First, I took an image of the EQ Radio that I had found on Google Images and copy and pasted it into a blank canvas[4]. Next, I found some images of the signals the EQ Radio uses and pasted those into the canvas as well[4]. Then, I drew arrows from each box to a textbox where I explained how the signal contributes to the emotion-reading. Finally, I used the pencil tool to draw the signals bouncing off of an image of a person that I found on Google Images[5].

Computing Innovation

2c. Explain at least one beneficial effect and at least one harmful effect the computing innovation has had, or has the potential to have, on society, economy, or culture.

(Approximately 250 words)

Insert response for 2c in the text box below.

The EQ Radio is a machine designed to read your emotions based off of involuntary changes in your body's behavior, such as an increased heart rate or unsteady breathing. The EQ Radio picks up this information by bouncing wireless signals off of the patient's body and utilizing the information to determine how they are really feeling.This innovation has the potential to do good by helping psychologists to pick up on cues invisible to the naked eye, the cues that they may have missed without the device, and could eventually be used in the healthcare industry to locate signs of depression or anxiety. Also, because the EQ Radio uses wireless signals to analyze patterns such as heartbeat, it is a highly accurate form of non-invasive health monitoring that could be used in many ways in the future, such as for learning about mysterious conditions like arrhythmia, a condition where the heart beats with an irregular or abnormal rhythm. But, the EQ Radio could also make the people of the future less social. If people started constantly relying on a machine to determine how someone else is feeling, they may lose the ability to communicate and understand emotions without it. Also, if the machine were to be wrong, or if someone was able to fool the machine by faking their actions, then the machine's reliability and accuracy would be questioned. Overall, the EQ Radio can be very beneficial with its medical applications, or be harmful by making people less social.

2d. Using specific details, describe:

- The data your innovation uses.
- How the innovation consumes (as input), produces (as output), and/or transforms data.
- At least one data storage concern, data privacy concern, or data security concern directly related to the computing innovation.

(Approximately 250 words)

Insert response for 2d in the text box below.

The EQ Radio uses data in the form of wireless signals bounced off of a patient's body to determine the patient's heart rate and breathing patterns[2]. Then, it transforms this data by using an algorithm and compares it with data from other patients to ascertain the specific emotion that is afflicting the patient at a given time[1]. In this scenario, the input is the patient's heart rate and breathing patterns, and it is transformed into the output, a display of the emotion the patient is feeling. However, the implementation of this device can raise some data security and privacy concerns. The vast amounts of information could be easily accessed by people with malicious intent, and your medical information could be altered[1]. Cybercriminals could use this information to break into your other accounts and ruin your life. Also, it would be possible for retail companies to find this information and use it to display advertisements pertaining to your personal life even if you did not want them to do so[3]. On top of that, if an insurer were to locate this information, they may increase the rates you are paying for your insurance and make great profits at your expense. But, even though there is lots of potential for negative effects as a result of this innovation, the various medical and psychological benefits far outweigh them.

References

2e. Provide a list of at least three online or print sources used to create your computational artifact and/or support your responses to the prompts provided in this performance task.

- At least two of the sources must have been created after the end of the previous academic year.
- For each online source, include the permanent URL. Identify the author, title, source, the date you retrieved the source, and, if possible, the date the reference was written or posted.
- For each print source, include the author, title of excerpt/article and magazine or book, page number(s), publisher, and date of publication.
- If you include an interview source, include the name of the person you interviewed, the date on which the interview occurred, and the person's position in the field.
- Include citations for the sources you used, and number each source accordingly.
- Each source must be relevant, credible, and easily accessed.

(Note: No word count limit for this answer)

Insert response for 2e in the text box below.

1. Griggs, Mary Beth. "Wireless Sensors Can Detect People's Emotions." *Popular Science*. Bonnier Corporation, 20 Sept. 2016. Web. 07 Feb. 2017.
2. Gent, Edd. "Device Can Read Emotions By Bouncing Wireless Signals Off Your Body."*LiveScience*. Purch, 4 Oct. 2016. Web. 07 Feb. 2017
3. Adam Conner-Simons | Rachel Gordon | CSAIL. "Detecting Emotions with Wireless Signals." *MIT News*. MIT, 20 Sept. 2016. Web. 07 Feb. 2017
4. Dignan, Larry. "Your Wireless Router Could Become Emotionally Intelligent, Says MIT."*ZDNet*. ZDNet, 20 Sept. 2016. Web. 08 Feb. 2017.
5. Bethell, Monique. "DailyTech - EQ-Radio: A New Device for Wirelessly Detecting Emotions."*DailyTech - EQ-Radio: A New Device for Wirelessly Detecting Emotions*. N.p., 26 Sept. 2016. Web. 08 Feb. 2017.