Lab 6

Web Programming II

In this lab you will practice basic HTML, CSS, and Javascript using CodePen. You will practice handling different DOM events in web programming.

Step 1: Make your own rendered robot face

Using HTML Canvas or SVG create a webpage, within a new Pen, that could be used as a robot's face. The robot face should have at least two eyes and one additional facial feature (e.g. mouth, nose, eyebrows, cheeks). Here are two example faces: Buddy (using Canvas) and Baymax (using SVG).

Step 2: Make your robot face look around

You will make the robot *look towards the cursor* when it is moved on the face screen. For this you will need to write a callback function registered to the `mousemove` event on the face. The callback function should access the current x and y position of the cursor and change the x and y position of the eye pupils accordingly. If your robot face did not have pupils add them now. Example of mouse tracking.

Hint: If you are using SVG, you can access the boundaries of the SVG element with:

```
let svg = document.getElementById("faceSVG");

let rect = svg.getBoundingClientRect();

// Now you can use rect.x, rect.y, rect.width, rect.height
```

Step 3: Robot Q&A

Lastly you will make your robot ask a question, wait for the response, and acknowledge when it hears the answer. First get familiar with basic speech recognition on the browser through this simple speech recognition demo Codepen (be sure to use the Chrome browser). Robot questions should be communicated with speech or with text displayed above or below the face (think of it as the robot's speech bubble or subtitle). Answers should be communicated with speech. There should be some acknowledgement that the robot heard the person's answer to its questions (e.g. robot could say "Answer recorded" or "I see"). Your robot should ask at least two questions in a row (i.e. ask the second question once the answer to the first question is acknowledged). The questions should be yes/no or other closed question (where possible answers are communicated to the person, e.g. "A, B, or C"). The exact questions you ask do not matter, but make sure anyone interacting with the robot will understand the question and will have an opinion about the answer (e.g. "Are you feeling stressed today?" or "Did you exercise yesterday?").

Optional

1. Optionally, you can make the Q&A interaction more meaningful, for instance by turning it into a trivia game with a timeout to answer questions and keeping score of correct answers. Or you can turn it into a personality test (e.g. 'which star trek character are you?') where you keep the list of answers to all questions and give the user an analysis at the end.
2. Optionally, you can make your robot's eyes blink. Start with a regularly-spaced blink by registering function that makes the robot's eyes blink to a periodical timeout with `window.setInterval(blink_function, blink_milliseconds)`. Your function can make the eyes disappear for a small duration or, if you would like to get fancier, it can animate the eyes closing/opening using SVG or Canvas. To make the blink look more natural you can change your code to make the time duration between blinks randomized within a certain range (e.g. 1 to 6 seconds) instead of periodical.
3. Optionally, include the callbacks to the python server API we developed in lab 5. Replace the backend code with whatever function(s) you'd like to perform in Python (e.g. running a machine learning outcome) and use the output of the HTTP request to influence the behavior of your JS robot.

for this lab, you will get 1 extra credit pt (1% of total grade) if you do any one of the above options. Please note on your lab submission which of the options you completed to receive credit.

Step 4: Submit your code on Canvas

Complete this lab by submitting a public link to your interactive face CodePen pen or project on Canvas, by Nov 13 Friday, 11:59pm. We will test your code by opening the CodePen and interacting with the rendered page to make sure:

- The robot gazes towards the cursor when the mouse is moved.
- The eyes blink with random intervals.
- The robot asks at least two questions which can be responded to with speech and the answer is acknowledged.

We will inspect code as needed. See Canvas for a grading rubric.