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PUI Section E
HW 8

Site (open in Chrome for speech recognition to work):
https://azizghadialimhci.github.io/HCI-Bot/

Github: https://github.com/AzizGhadialiMHCI/HCI-Bot

Part 1
The purpose of my website is to help people explore recent/popular papers related to hot topics in the design of emerging technologies. The information I show are curated lists of papers related to different topics (autonomous vehicles, wearables, and virtual reality) with brief descriptions that people can read before clicking to access the full resource. The site is interesting and engaging in that it uses voice recognition as the primary method of navigating between different topics and uses particle effects to add a more fun and playful feeling to the information tool. The target audience is any designer interested in learning more about emerging technology experiences and looking for an easy way to explore different methods for designing for them.

Part 2
- Mouse click to dismiss initial information
    - Click on “Ok, I got it!” to dismiss the initial information
- Mouse click to start/stop voice recognition
    - Click on “Start exploring” to start recording your voice
    - Click on “Stop listening” to stop recording your voice
- Voice to select different topics
    - Click on “Start Exploring”
    - Say one of the canned responses below the wave animation to navigate to a sub-topic [‘Autonomous Vehicles’, ‘Wearables’, ‘Virtual Reality’]
    - Say one of the canned responses below the wave animation to navigate to papers about the sub-topic. Ex. [‘Accessibility’, ‘Entertainment’, ‘Safety’]
    - Say “Learn Something Else” to navigate back to the start screen at any point
- Mouse click to navigate to paper resource
    - Use the voice to search select a specific topic
    - When the list of papers appears, click on “View paper” to be taken to the resource
    - Scroll down to the bottom of the page to see the voice controls and prompts

Part 3
- React
    - **Why I chose it:** I chose to use this tool to explore a new web framework for building single page web applications. I chose to use React over Vue or Angular primarily because it was a tool I was interested in learning especially since I

wanted to move into exploring React Native as a next step. This was also a requirement for the final project for Section E.
    - **How I used it:** I used Create React App to get kickstarter with using react since it was my first time working with the web framework. When building out my UI I created separate components for each of the major elements such as the header, voice tools, particles, and canned responses and put them together in my App.js file which runs the main components.
    - **What it adds to my website:** One of the main benefits of using react is that I can reload the page data without having to reload the webpage itself. This was a major help when trying to create changes in the canned responses and questions shown by the particles.
- tsParticles
    - **Why I chose it:** I decided to use tsParticles because I have done a lot of computer graphics work in the past and was really interested in connecting graphics related to my project. I have always been a fan of particles and felt that the use of particles to show the "bot's" questions would be a cool way to frame it as a virtual assistant you are talking to.
    - **How I used it:** I used the react-tsParticles library to generate the actual particle objects. Using this library, I created a component (TextParticles) that organizes the particle canvas according to the text I wanted to appear. The component takes in props for the SVG, height, width, x-position, y-position, scale, which allows me to change the text/images displayed by the text and to scale the particles based on the page size. In addition, to create the SVGs, I used Adobe Illustrator to create compound path vectors.
    - **What it adds to my website:** The particles add a little fun and playfulness to my React application. They also serve as a tool to immerse and engage the user more into the site since it is one of the unique aspects of the site that differentiates it from other informational resources finders.
- React Speech Recognition
    - **Why I chose it:** I chose this library because voice recognition and communicative agents are an area of design that I am really interested in. I decided to take this opportunity to build a project where I could finally explore voice in some way. I also felt that the use of voice to navigate the site went in line with the theme of exploring emerging technology design.
    - **How I used it:** I used the react-speech-recognition library to handle the processing of the voice input. Using the library, I was able to gain access to Chrome's voice recognition tools to take in the voice input, process it, and add rules for specific voice inputs. When a specific voice input is recognized, I generate a callback message that is used by my application to determine what to do next (how to update the particles, canned responses, and list of papers).
    - **What it adds to my website:** The voice recognition piece adds a really unique interaction technique to my website that goes beyond the traditional mouse and touch techniques used for websites. I also think that using voice for this particular site has a more immersive effect where instead of just being a look-up resource,

it supports a slightly more realistic interaction of being able to ask someone for the information you are looking for and getting dynamic feedback in response to your communication.

- React Siriwave
    - **Why I chose it:** I chose to use this library because it allowed me to use a well-known voice related animation to give the user feedback on whether or not the system is listening to them. I picked the this library in particular because it allowed some flexibility in manipulating the wave forms (such as the style, amplitude, and speed)
    - **How I used it:** I used this component in conjunction with the React Speech Recognition library to change the parameters based on whether or not the system is listening. The “Start exploring” button triggers the speech recognition to begin, changing the listening variable to true. If the listening variable is true, the waveform is given an amplitude greater than 0 and if “Stop Listening” is clicked the listening variable is set to false and the amplitude is set to 0.
    - **What it adds to my website:** The wave form adds a very clear and explicit feedback mechanism to my site that allows users to know when they are being listened to. This serves two purposes. First, I wanted people to have some visual indicator that speech is still being processed even if their request is not handled on the first try. Additionally, in order to address privacy issues, I wanted people to have visual feedback when they turn off the speech processing to know that they are no longer being listened to.

Part 4

The three main changes I made between my prototype and my final website were to include images in addition to text in the particle displays, use the wave-form as a visual feedback mechanism, and the way my informational resources are actually displayed since I had not really decided on the specific content I wanted to include for each topic. The final design I decided to use for the informational resources was a neomorphic styled list rather than a modal to show the different papers. I felt that using a neomorphic style that replaced the particle canvas was more effective as the styling choice better conveyed the feeling that you are interacting with an actual assistant that is generating the content rather than looking up information on a traditional website. In addition, it made it easier for people to interact with the resources and navigate back to the start screen.

Part 5

One of the major challenges I had was understanding how to get started with React and setting up my App for the first time. In addition, dealing with particle graphics was less than trivial especially when it came to loading in the SVG’s, styling the canvas, and making it adjust to different breakpoints. Lastly, getting the speech recognition to work and connecting all of the different components such as the start, stop, and wave form definitely took me some time because it was my first time working in React.