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Design Studio 1 - Video Feedback

Team members (kerberoses): **mmsands**, **ksmori**
Project name: **Sketchmoji**
Video Link: https://youtu.be/ZZP9qJVqoeY

Short Summary (2-3 sentences; what does it do and how)
Sketchmoji allows users to sketch the emoji they are thinking about. The system will then determine which emoji the sketch is supposed to be (via stroke segmentation, template matching, CNN, or decision tree) and give emoji suggestions for the user to pick out. Drawings will be done on webpage, and processed via javascript.

Three things you like about the project

1) The system rank potential emojis drawn (from most probable to least probable)
2) Very applicable/relatable, especially for mobile apps. There have been many times where I wanted to find an emoji, but had difficulty doing so.
3) Modern application to previous problem (classifying emojis, which we can say is a language of its own :), as opposed to classifying character-based languages such as chinese/japanese)

Three things that could use improvement

1) Can the system anticipate user intentions so that they don't have to draw the entire image before it is able to predict what the emoji might be? (similar to google search suggestions)
2) Drawing on the computer with a mouse is difficult, as opposed to finger. Is it possible to do it with a stylus (ie. wacom pad), gesture, or on the phone?
3) How will the system account for rotational invariance in user drawings, especially since you're using stroke segmentation/template matching? How will you get enough data to train your system?

Additional Comments

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Design Studio 1 - Video Feedback

Team members (kerberoses): **cmjlee, mzhong**
Project name: **Multimodal Tetris**
Video Link: https://youtu.be/hAv3MD3Prc0

Short Summary (2-3 sentences; what does it do and how)
Multimodal Tetris enables users to play tetris using finger gestures. Different gestures correspond to different tetris movements (ie. move left, right, soft/hard drop, hold). Tetris game will be implemented via pygame, and gestures will be detected via leap motion.

Three things you like about the project

1) Using the speed of hand movements to differentiate gestures to make it more intuitive (ie. slow downward motion = soft drop vs. fast downward motion = hard drop)
2) The team will try to consider different options to make gestures more intuitive through user feedback and experimentation.
3) Found a good problem (that keyboard movements aren't intuitive), and created a system that can potentially make it more intuitive! I'd be interested in playing the game :)

Three things that could use improvement

1) How will the system know when a gesture starts/stops, especially if the user is playing really quickly?
2) Are there open-source tetris implementations already out there, or will you be writing the entire game from scratch (which might be time-consuming)/
3) Using speed to differentiate gestures is intuitive, but how will you determine different user thresholds for fast and slow movements?

Additional Comments

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Design Studio 1 - Video Feedback

Team members (kerberoses): **nanxi**
Project name: **Muse: Audio to Music Notes Transcription**
Video Link: https://youtu.be/g4pa9yYQYEg

Short Summary (2-3 sentences; what does it do and how)
Muse converts audio music ideas automatically into music sheets. After, the system will enable users to transcribe music to be edited easily on the music sheet (how this is implemented was not described in the video). User commands will be auditory, and processed via Google Text-to-Speech.

Three things you like about the project

1) Did background research on the user base (aka. asked her music teacher), and formulated a problem/solution based on the user responses. This makes this application applicable to the actual user base.
2) Versions 1, 2, and 3 are all of similar difficulty. Version 1 includes a reachable MVP. Good separation of core + added functionalities.
3) Many interesting ideas to extend the core functionality: start, stop, play, rewind, etc.

Three things that could use improvement

1) How to transcribe from audio -> notes? What APIs are out there? What information will the API give you? What stuff will you need to implement from scratch?
2) How will students edit notes on the staff? Gestures? Computers? Voice commands?
3) How will you be recognizing music to convert to sheet music?

Additional Comments

- In general, more research needs to be done to determine how the system can be implemented. Good ideas, but missing implementation details.

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Design Studio 1 - Video Feedback

Team members (kerberoses): **nava**
Project name: **Loa**
Video Link: https://www.youtube.com/watch?v=-uJxmm7DUEQ

Short Summary (2-3 sentences; what does it do and how)
Loa is an interactive "being" that responds to the user's physiological states by reacting and making users take action to "take care" of it until the user's emotional state stabilizes. Interactions with Loa include breathing, toss, spin, fidget, tickle, and rub.

Three things you like about the project

1) SUPER unique idea! This is completely different from any other project proposed so far, and very innovative, given the hardware that is already available.
2) Attempts to subtly calm the user down through interactions with the pet, so that the user doesn't consciously have to adjust their own mental state.
3) Focus on emotional connection by having the user see Loa as a "pet", and then using that emotional connection when Loa acts up to adjust the user's own emotional state.

Three things that could use improvement

1) User: stressed → Angry: red flashing; Will this make the user more stressed? What types of responses are best for each emotional need?
2) How much is the extra interaction with Loa really beneficial, or just a "waste of time"?
3) Is Loa a phone app? How will users know how to respond the first time it happens?
4) How will Loa be better integrated with daily life? How will its responses become more intuitive that's helpful to user's emotional states, rather than giving them an extra responsibility of taking care of another emotional "being"?
5) How often will Loa need looking after?

Additional Comments

All Videos: https://docs.google.com/spreadsheets/d/1rkX3RZutWElXmTwanW-VyFmhB_oNdprDzLGmrSv5V0Y/edit#gid=1582251233

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Design Studio 1 - Video Feedback

Team members (kerberoses): **ndevasia, nhussein**
Project name: **Air Guitar**
Video Link: https://www.youtube.com/watch?v=xeBiznrQeRw&feature=youtu.be

Short Summary (2-3 sentences; what does it do and how)
Air guitar is a portable guitar that can be played using the Leap Motion and a computer. The Leap Motion tracks the user fingering and strumming positions to determine the appropriate guitar sounds to project. A UI (created via Unity) shows the user a real-time representation of the chords currently being played.

Three things you like about the project
1) The system allows both virtual strumming and fingering chords!!
2) As opposed to a regular guitar which is usually large and fragile, the leap motion guitar design is portable, and because it is made of plexiglass it is more robust.
3) Using Unity, the UI shows a visual representation of what is being played, so the user knows exactly what is being read/processed.

Three things that could use improvement
1) What if the left fingering is slightly off? Is it possible to add divets in the plexiglas to make it easier on the user for finger placement?
2) Leap motion has very limited range, so how will you keep the user to one place / prevent them from moving out of range? Is the leap motion range large enough to strum and finger?
3) How are chords with the same fingering but slightly shifted be differentiated? Especially since users will be moving constantly? If the leap motion is solely depending on recognizing hand shape, then the leap motion needs to be attached physically to the guitar?

Additional Comments

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Design Studio 1 - Video Feedback

Team members (kerberoses): **olivias**
Project name: **Drawdibles: Tell Creative Stories Using Doodles and Audible Communication**
Video Link: https://youtu.be/dhpny7_u1To

Short Summary (2-3 sentences; what does it do and how)
Drawdibles extends kids creativity drawing-wise by first listening to what the kids want to draw, allowing the kids to start drawing on the sketch pad, and then potentially finishing the drawings for the kids when they get stuck. This application is a fun and engaging way for kids to explore their creativity. Kids draw on a webpage, through a model trained via tensorflow.js, the system is able to predict what the user intended to draw.

Three things you like about the project

1) Beautiful and intuitive UI with your current prototype (wow!); Extremely well thought-out design!
2) Potential extensions to after the system/kid completes the drawing (ie. if the kid draws a cat, the cat will meow after completion)
3) All of the software is via web development languages (ie. javascript, html, css), so not as much issue with software integration across multiple platforms.
4) Training data is well described and accessible.

Three things that could use improvement

1) How to differentiate between when the user wants / doesn't want the system to take over? Maybe want a system that will wait for user input (ie. "finish for me") before taking over?
2) There's an immense amount of future work that is currently listed, which seems to be a bit much for the class. Can some of these features be re-focused to just the core functionalities?
3) Can the user draw images other than animals? According to system diagram, you are only importing the "Macaulay animal sound library". What if a user draws a train? Will it go "choo choo"?

Additional Comments

All Videos: https://docs.google.com/spreadsheets/d/1rkX3RZutWElXmTwanW-VyFmhB_oNdprDzLGmrSv5V0Y/edit#gid=1582251233

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Design Studio 1 - Video Feedback

Team members (kerberoses): **scfeng; ruowangz**
Project name: **Multimodal Touchless Video Controller**
Video Link: https://youtu.be/6-ASQ8E2mt4

Short Summary (2-3 sentences; what does it do and how)
The Multimodal Touchless Video Controller allows users to control videos on their laptops and tablets remotely using gestures and speech, as opposed to keyboard touch. This is beneficial when the user is doing tasks that occupy their hands, preventing them from using the computer keyboard. Gestures and Auditory inputs from the user are detected and parsed via the Leap Motion and Google Web Speech API, respectively.

Three things you like about the project
1) Very related project since I cook a lot, and my computer is super dirty now because of it.
2) Incorporating both gestures and speech as inputs allows the possibility of applying cross-modal understanding
3) Project has the ability to incorporate pretty intuitive gestures in (ie. hand raise for stop, point left for rewind, point right for fast-forward, etc.)

Three things that could use improvement
1) Why use both gestures and speech, why not just use speech? How will each be used?
2) Why use multiple OS (both Mac and windows)? Is that necessary to display the innovativeness of this project?
3) What kind of video SDKs will you be using?
4) How will the system differentiate sounds coming from the video as opposed to the user?

Additional Comments

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Design Studio 1 - Video Feedback

Team members (kerberoses): **taraliu**
Project name: **Voicebox - A Gestural Musical Instrument to Modify Your Voice**
Video Link: https://youtu.be/z3dQGtLEpEo

Short Summary (2-3 sentences; what does it do and how)
Voicebox is a physical box that enables users to record and edit their own voice! Voicebox is a physical box with a microphone attached to the bottom that listens to user voice input. The user records their voice using keyboard commands, then uses the gestures detected via the leap motion to reshape their voice as needed, and Python is used to combine all the logic and output the sound to the user.

Three things you like about the project
1) Great visualization/description of your gestures! Thanks for actually showing us the gestures in the video, so we have a clearer idea of what the potential gestures are.
2) Thought of how to make the design more appealing to the user, and live up to it's name by putting all the required hardware into a box
3) Offers a variety of sound editing features within the envisioned system.

Three things that could use improvement
1) How will you get the echoing effect using the box?
2) What is the point  of having a physical box, as opposed to just using a microphone?
3) Why use the keyboard to start and stop recording audio? What about using the gestures to do this, in order to eliminate the extraneous input type?
4) How will you guide/teach the user how to use these functions in the beginning? A lot of great ideas, but it seems a bit difficult to grasp at first without a tutorial.

Additional Comments

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Design Studio 1 - Video Feedback

Team members (kerberoses): **sophias; mnielan**
Project name: **druMIT: Virtual Drumming**
Video Link: https://youtu.be/TR9Sxaho8Y4

Short Summary (2-3 sentences; what does it do and how)
druMIT uses hand gestures to create percussion beats depending on gesture type and hand position. The gestures are detected via the leap motion, and the appropriate drum sounds are played.

Three things you like about the project

1) The problem described that the drumset is expensive and huge, so parents don't want to purchase/let you get into this hobby is SUPER relatable, since I was a percussionist in high school!
2) Incorporates both drum and drumstick sounds! Includes multiple type of drum sounds depending on drumstick type (I like the suggestion of recognizing different drum sticks ie. a banana, and plying the sound appropriately)
3) Enables users to practice percussion without and the need for an actual drumset!

Three things that could use improvement

1) How will individual gestures (ie. each drum beat) be recognized? Wrist flick?
2) How will you account for different user hand motions? One user might use a wrist flick, while another uses a wrist flick (ie. hitting a snare vs cymbal)? Hand location?
3) What is the spatial resolution between different drums?

Additional Comments

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Design Studio 1 - Video Feedback

Team members (kerberoses): **tosino**
Project name: **Sous-Chef: Burger Cooking Assistant**
Video Link: https://youtu.be/dQYC1AvPxYw

Short Summary (2-3 sentences; what does it do and how)
Sous-Chef is a digital cooking assistant that watches your food (ie. burgers) and lets you know when it's done. The system helps the user gain intuition for cooking and cuts down on food waste by notifying the user when the burger is finished cooking. The system uses the leap motion, google speech API for auditory inputs, camera/opencv to determine when the burger is placed, and the pygame to integrate all the software.

Three things you like about the project

1) The implementor plans on using simple pixel/object recognition algorithms to determine burger placement, instead of immediately trying to deep-dive into more complex ideas.
2) Using a black cooking pan, so that the burger is more easily identifiable.
3) Has a timing option that helps you determine when a burger is overcooked, in case the user isn't paying attention.

Three things that could use improvement

1) Is this just for burgers? What about other food types?
2) How do you account for different kitchen environments + camera angles? ML to recognize patties? How will you detect burger flip?
3) Rather doing everything in javascript, you can use the built-in Python SDK within the leap motion SDK, that way you can incorporate leap motion with opencv and pygame.

Additional Comments

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Design Studio 1 - Video Feedback

Team members (kerberoses): **venkats**
Project name: **Associative Image Classification Using Gestures**
Video Link: https://youtu.be/UNLLlw-iDuA

Short Summary (2-3 sentences; what does it do and how)
This project creates an UI that allows users to input gestures and verbal cues to label parts of the image. It uses a pre-trained NN image model via Keras to associate cutes to image classifications to generate image descriptors/explanations, and uses the leap motion and the google speech recognition api to determine gesture and speech inputs.

Three things you like about the project

1) The implementor considered the scope of the project and focused on just the UI side. This project came about with the idea of detecting medical images (ie. radiology), but he re-focused it onto getting the UI part working first, so that it doesn't get too complex.
2) Had backup plans (ie. user input) in case the ML training side doesn't work out.
3) Very interesting way to associate personal user labels to given images, rather just sticking to the original labels (ie. relabelling pre-trained "dog" image to "doggo" or "pupper")

Three things that could use improvement

1) How will you test this application virtually (since users need the leap motion and script)?
2) Going off of the initial motivation, will radiology images be trained live (since it's difficult to get training data or a pre-trained network)?
3) Will the explanation data (to be trained by friends) be enough for your implementatiton?

Additional Comments

- Very well-thought out project that considered a lot of alternatives and explained the thought-processing behind the designs.

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Design Studio 1 - Video Feedback

Team members (kerberoses): **xiaoyunz**
Project name: **DCL (Dice, Chop, Leap): Cooking Knife Skills Assistant**
Video Link: https://youtu.be/g3zkt-b6RhM

Short Summary (2-3 sentences; what does it do and how)
DCL visualizes cutting board instructions on real food on the cutting board via projection mapping from above, in order to guide the user in developing good knife skills. A UI interface (via Unity) enables users to select the type of food they are cutting and how via gesture recognition with the leap motion, and a projector hangs from above to project necessary skill images.

Three things you like about the project

1) Great analysis on how the math on how food is usually cut and why. This gives good insight and background as to why this application is useful.
2) Provides details on all the hardware, including projector type.
3) Included example questions to ask during the user study! Well thought out!

Three things that could use improvement

1) Integration of multiple systems (ie. Unity, Leap Motion SDK, projection mapping) might be a challenge, depending on the implementor's initial familiarity with the software systems. For example, unity communication port forwarding is not super easy to set up with python. In general, each integration step might take longer/more work than expected, so I would be wary about time expectations.
2) How will the system track the users hand positions on the board if the board is bigger than the frame?
3) Since the projection will not be on a flat surface, how will the projection account for lumpiness on the actual surface, since precision is necessary in this context?
4) How will you calibration the projector? What about scale(ie. 1inch in pixel space to 1inch in real-image space)? Lumpiness of the projection? Potentially look into projection mapping?

Additional Comments

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Design Studio 1 - Video Feedback

Team members (kerberoses): **yasmin96**
Project name: **Leap Motion Wrist Physical Therapy**
Video Link: https://youtu.be/M8F9JByk_s8

Short Summary (2-3 sentences; what does it do and how)
The Leap Motion Wrist Physical Therapy enables users to do wrist therapy ***correctly*** in the comfort of their own home. The leap motion tracks the user's wrist positions and provides feedback on if the user is doing the movement correctly via a series of different games run via Phaser (open-source framework for development mobile/desktop html games).

Three things you like about the project

1) Includes 5(!!!) different versions of the project with pre-defined goals so that the project is complete-able!
2) Includes live interface with therapists during the game (in the later versions) that can enable therapists to provide game suggestions and feedback.
3) Incorporates multiple wrist movements that is common in wrist physical therapy exercises.

Three things that could use improvement

1) High accuracy will be important (ie. signal averaging + signal smoothing) in order to be able to recognize the subtleties of correct/incorrect hand motions
2) Will there be a UI that shows the user what type of gesture to attempt to copy? How will the user know what their wrists should look like?
3) Will adding the ability for therapists to contribute require a separate app development, or will it be integrated via voice input?

Additional Comments

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Design Studio 1 - Video Feedback

Feedbacks not given:

1. Braille E-Learner - my project
2. Magic Mirror Virtual Assistant - video link not uploaded

All Videos: https://docs.google.com/spreadsheets/d/1rkX3RZutWElXmTwanW-VyFmhB_oNdprDzLGmrSv5V0Y/edit#gid=1582251233