

Concrete Design: B(AI)LAR

Introduction

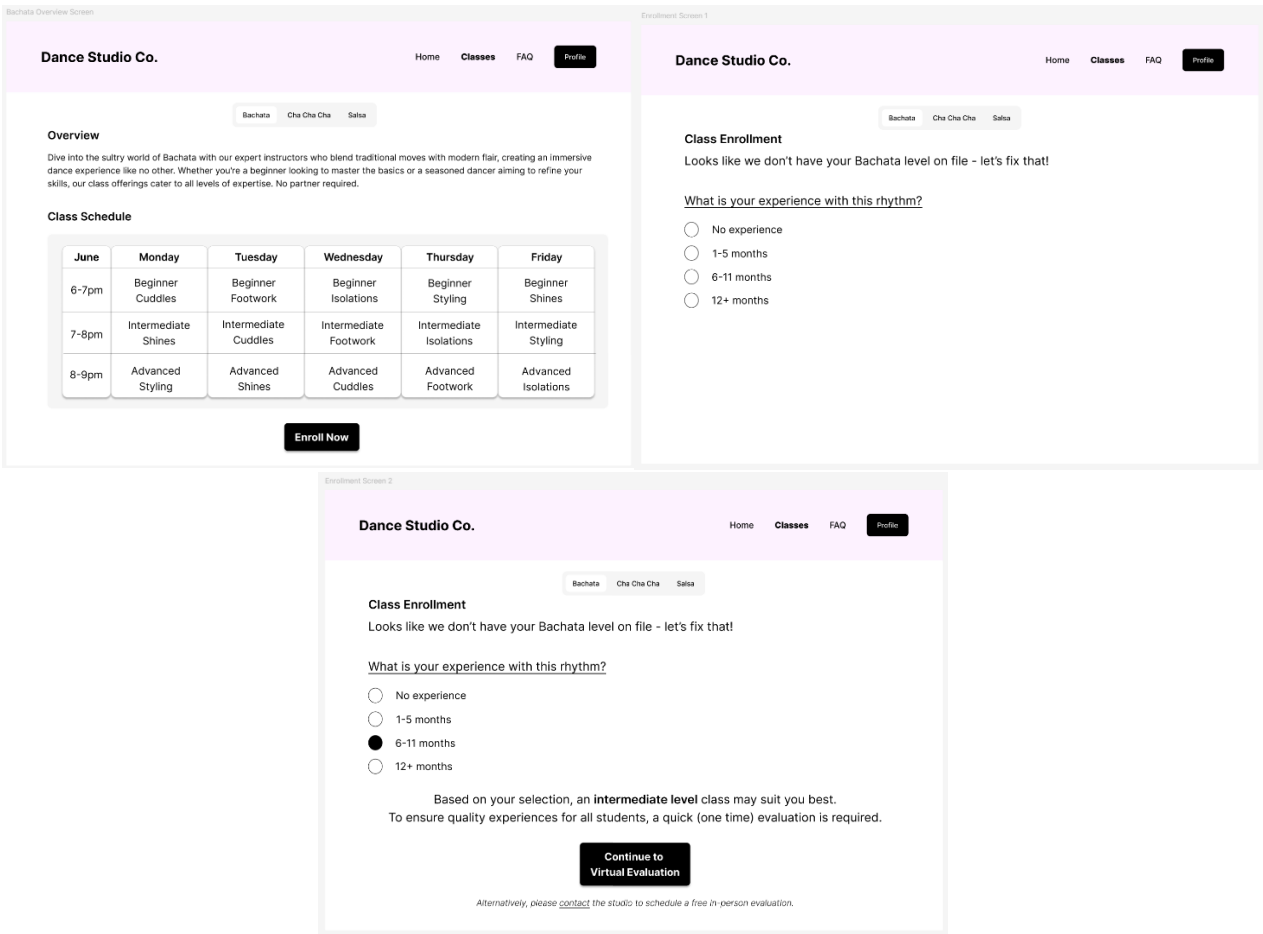
Present day, dance studios commonly require new and advancing students to complete a dance evaluation prior to enrolling in a class. As a result, students must take the initiative to coordinate an evaluation with the studio and physically go to the studio to complete it before they can enroll in and attend the desired class. While dance evaluations help appropriately align students to classes based on their current skill levels, the manual steps inconvenience the student and might result in business fallout, studio policy violations, and or poor customer experience. B(AI)LAR is a conceptual design exploring an opportunity for dance studios to incorporate Artificial Intelligence (AI) for dance skill assessments and introduce more self-service to their class enrollment process online. This report summarizes the increased fidelity in the design of the system since its conceptual design by means of prototyping a proof-of-concept, including design rationale and evaluation results.

Increasing Fidelity

Wireframes

With the sketches complete, I utilized Figma to create wireframes of the screens. While the purpose of the prototype is to demonstrate the entire user flow, I kept the dance studio site design simple and straight-forward since the main focus is the AI interaction.

Enrollment screens



Evaluation screens

Evaluation Screen 1

Dance Studio Co.

HomeClassesFAQProfile

BachataCha Cha ChaSalsa

Virtual Evaluation

We leverage B(AI)LAR to provide our students the flexibility to complete their free evaluation whenever and wherever is convenient to them. This requires approximately 5 minutes on a computer, tablet, or mobile device with a camera and internet connection.



To continue on a different device, please scan this QR code

What to expect
Once camera access has been granted and enabled, your camera feed will display on the B(AI)LAR interface so you can adjust to ensure you are clearly in the frame. When you are ready, you will give a thumbs up 👍 and the interface will display the requested dance move for you to execute. The AI technology will be able to recognize your body movements and validate they match the criteria we set. You will continue through the series of dance moves until you've attempted them all. You will then receive your evaluation results and recommended class then continue with checkout. The evaluation results will be saved to your profile, so next time all eligible classes will be visible for enrollment!

Evaluated moves

- Modern basic step
- Basic forward
- Basic backward
- Inside right turn
- Inside left turn

Ready?

Open B(AI)LAR

Evaluation Screen 2

Dance Studio Co.

HomeClassesFAQProfile

BachataCha Cha ChaSalsa

Virtual Evaluation

B(AI)LAR

Let's get started!

B(AI)LAR wants to

📷 Use your camera

BlockAllow

Evaluation Screen 3

Dance Studio Co.

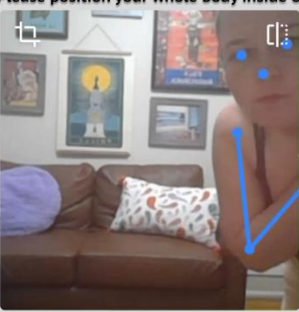
HomeClassesFAQProfile

BachataCha Cha ChaSalsa

Virtual Evaluation

B(AI)LAR

Nice! Please position your whole body inside of the frame.



Evaluation Screen 4

Dance Studio Co.

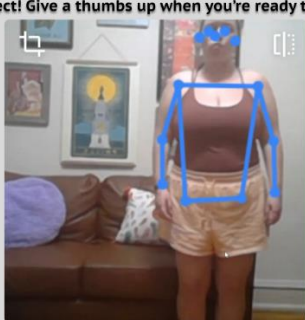
HomeClassesFAQProfile

BachataCha Cha ChaSalsa

Virtual Evaluation

B(AI)LAR

Perfect! Give a thumbs up when you're ready to start 🙌



Evaluation Screen 5

Dance Studio Co.

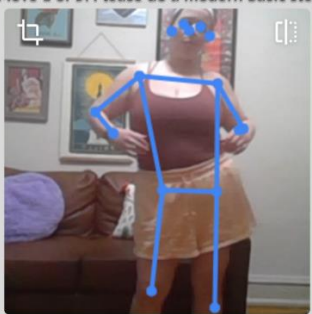
HomeClassesFAQProfile

BachataCha Cha ChaSalsa

Virtual Evaluation

B(AI)LAR

Move 1 of 5: Please do a modern basic step.



Evaluation Screen 6

Dance Studio Co.

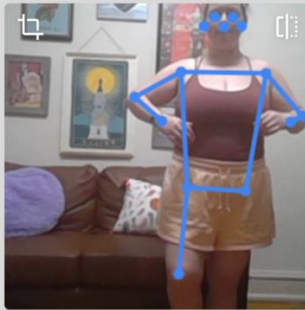
HomeClassesFAQProfile

BachataCha Cha ChaSalsa

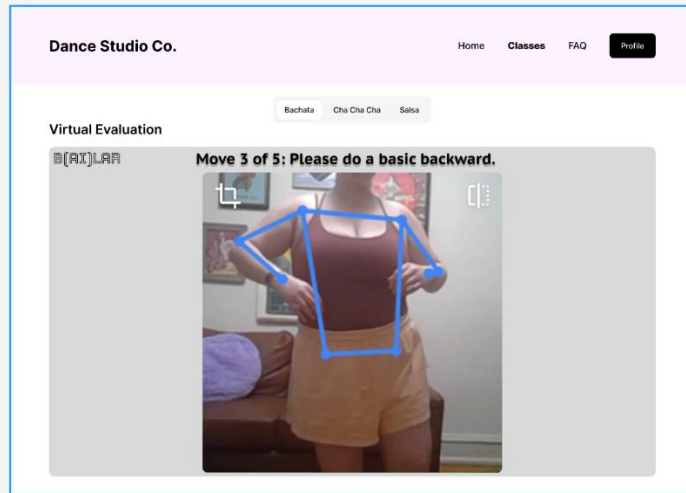
Virtual Evaluation

B(AI)LAR

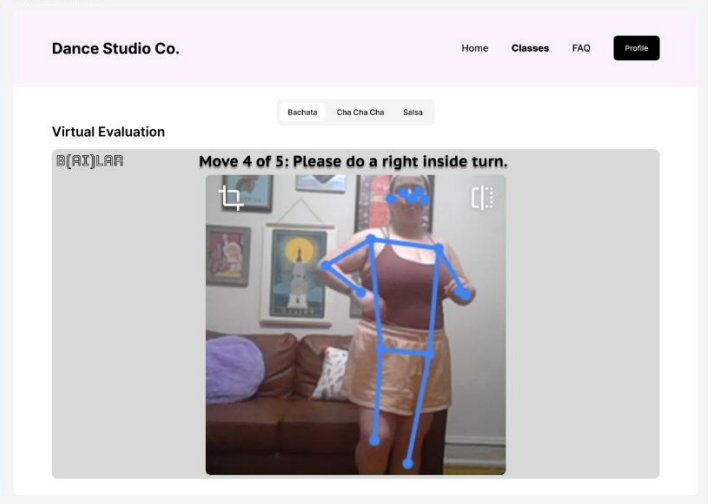
Move 2 of 5: Please do a basic forward.



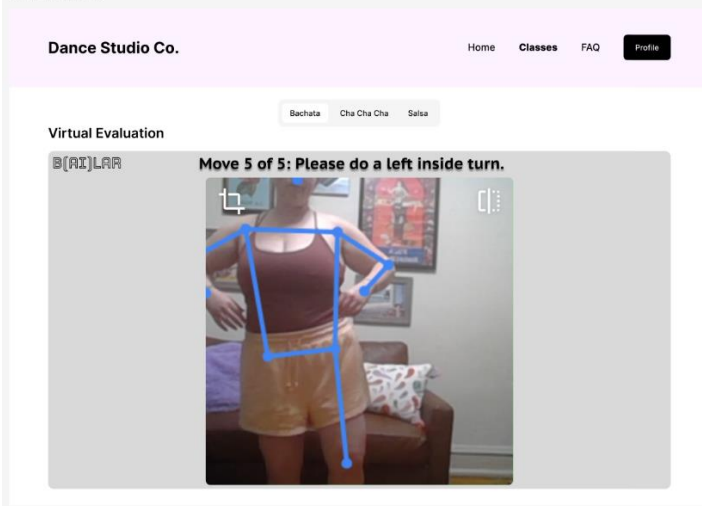
Evaluation Screen 7



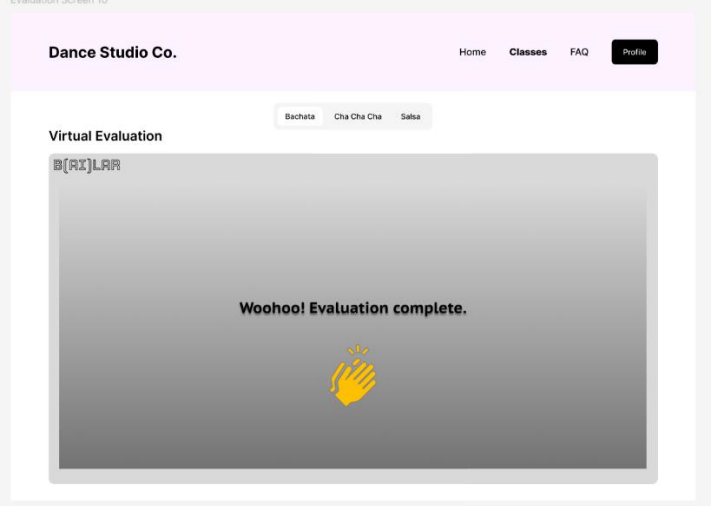
Evaluation Screen 8



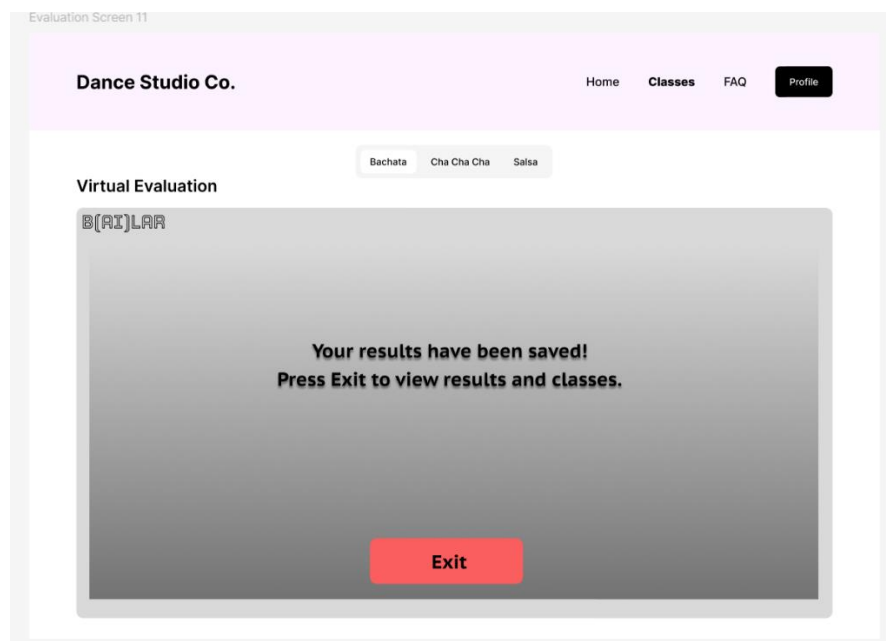
Evaluation Screen 9



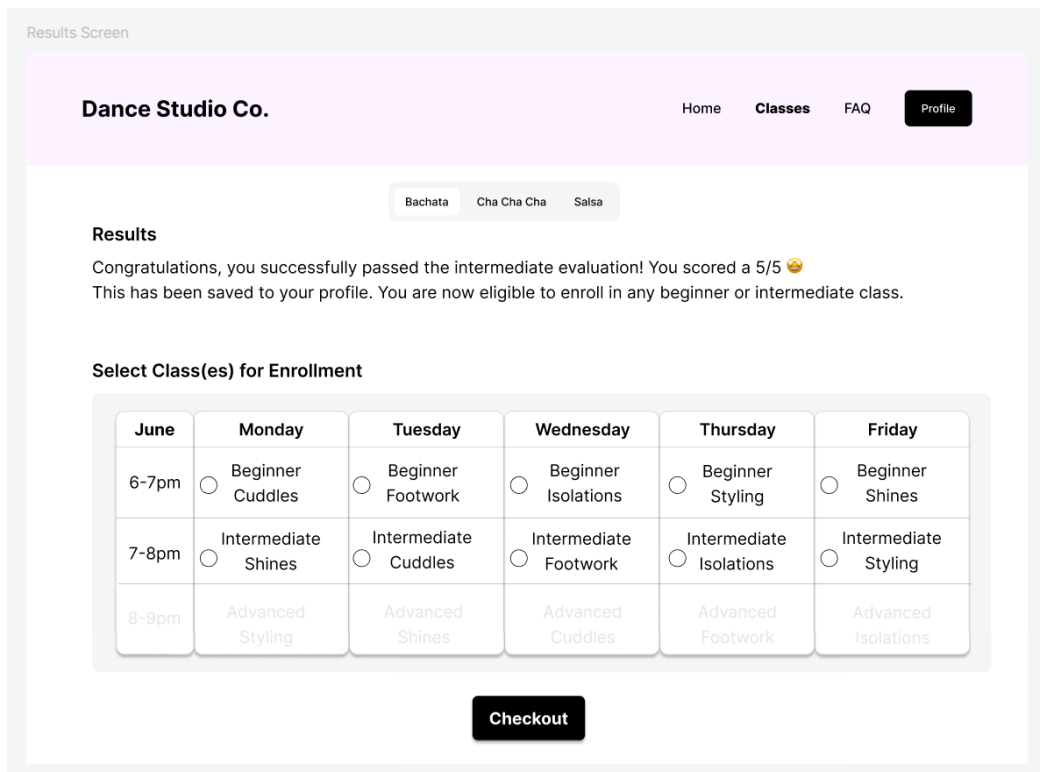
Evaluation Screen 10



Evaluation Screen 11

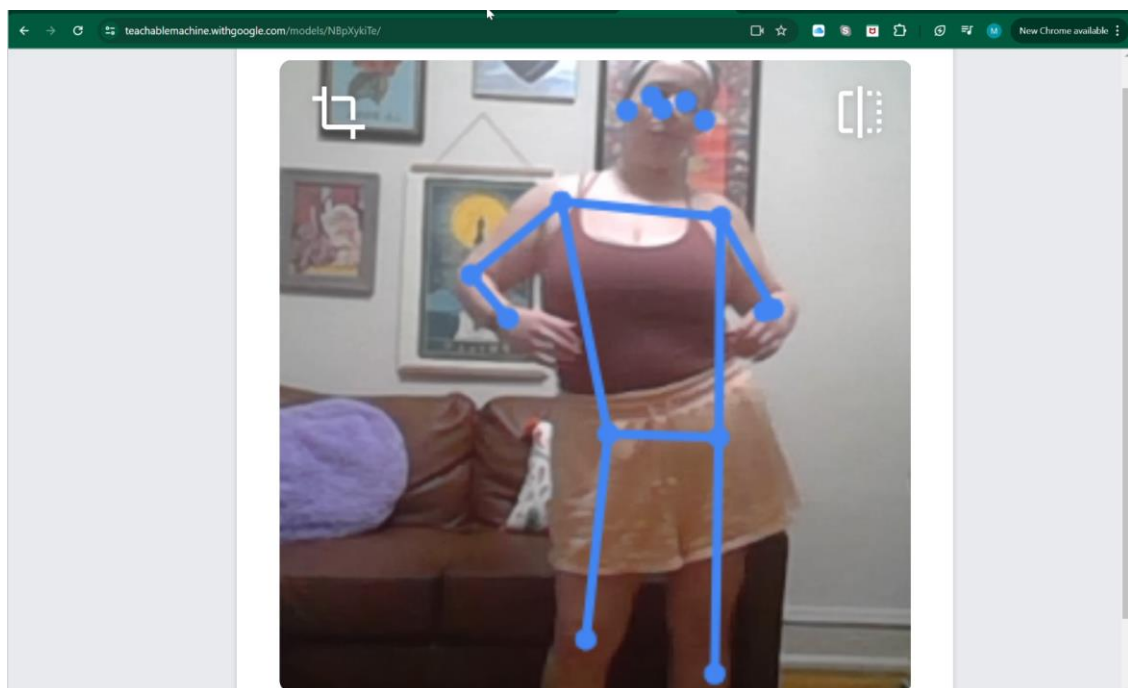


Results screen



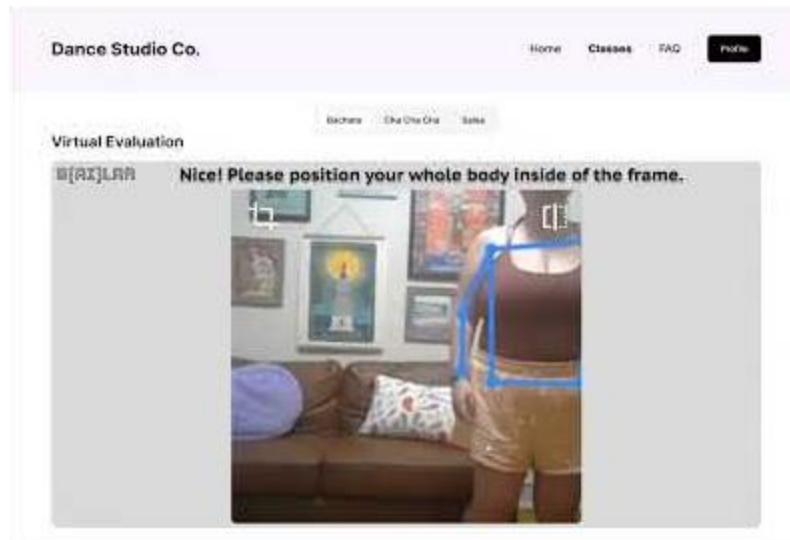
AI Pose Detection

I utilized Teachable Machine to demonstrate how AI technology is able to distinguish a user's poses and movements. After I trained a test model, I screen recorded the preview live camera feed of the model and executed the dance moves that the example evaluation in the prototype requires. I zoomed in with my browser and cropped the rest of the site. These clips were then added to the appropriate wireframes in Figma.



Prototype Video Demonstration

Since Teachable Machine does not recognize a series of poses as one entire move, I created a Wizard of Oz-style video to demonstrate the user experience and prototype. The video is a screen recording of the flow in Figma's preview functionality. Lastly, I opened the recording in ClipChamp to crop the video and add animations, such as the countdown, checkmarks, and star rating, that could not be completed to the same effect in Figma.



Design Rationale

Wireframes

Enrollment screens

I leveraged personal knowledge of what various Latin dance studios in my area include on their websites. I did not want to overwhelm the screen with information since that is not the focus of this project. I used ChatGPT to write the overview section of the bachata landing page and wanted to include that the studio offers various levels of classes to foreshadow one of the key factors at play for this design problem.

For the class schedule, I wanted to ensure it was easy to browse and see that there are various types of classes you can take at each level.

When the user clicks enroll now, I intended it to be understood that the site is pulling information stored on the client's profile to see what classes they are eligible to enroll in, since classes must be taken progressively and evaluation is required. If something were on file, the system would not prompt the user to fill this information out again but rather display a table to the likes of the one on the results screen where only the eligible classes are highlighted.

To start the evaluation, the system needed to first get an idea of where they might be. The majority of dance studios that I have encountered use experience in terms of time as the main indicator, thus I made a simple multiple-choice question that will help the system determine next steps for either which classes to make available (no evaluation required for beginner) or which evaluation to offer.

I included the alternative option in italics below to subtly highlight that the virtual evaluation saves the client time and effort since they are able to complete it virtually instead of finding a time that even works and taking the time to commute to the studio.

Evaluation screens

The first evaluation screen serves as an introduction to the virtual evaluation experience for the customer. It's only purpose should be to provide the most relevant information they might need to feel comfortable getting started and continuing their flow towards enrolling in a class.

I provided a QR code in case the user was only attempting to enroll in a class on a device that might not be suitable for a virtual assessment, so now that they know that an evaluation is required to enroll, they might want to continue on a different device.

I wanted B(AI)LAR to be embedded into the dance studio's site so that the client feels more comfortable that they are not being redirected to a spam site, especially since it is requesting camera access. Moreover, embedding the interface inherently reduces redirection and thus distractions and potential fallout.

Once the camera is enabled, the user is able to see themselves and the lines on their body that the system is recognizing. This serves as transparency for the user to understand what the system sees, so if the lines are not appearing nor calibrated, they should know something is not working as expected. The system will direct the user to center themselves and validate once they are in frame. This is so that the system will not let them move forward until it can clearly see the person. As soon as it is able to, it instructs them to put a thumbs up, allowing them to determine when they feel ready, even if the system is ready before them. The countdown will let them know when the evaluation is starting.

The evaluation screens only provide a progress (Move # of 5) status and the requested dance move to reduce any redundant information or distractions. The check mark appears when the user has met the minimum required steps to satisfy the requirements of the move and provides real-time feedback to the client.

Once all moves are completed, B(AI)LAR will inform the client of their score in terms of stars and state that it is complete. Their camera also immediately turns off once the evaluation is completed but also while the interface is still open to make it clear that the system can no longer see them. The client is prompted to manually click an exit button to draw them back to their device since the remaining steps will require their selection of classes and checking out.

Results screen

The results are posted again on this screen incase the user missed it on the B(AI)LAR interface screen that disappeared. It also reaffirms to the user that their information was saved to their profile, inferring that they will now always be eligible for these classes and will not need to complete this again.

The class schedule is posted again in the same format but now with buttons. Assuming the client already familiarized themselves with the table on the first screen, it should be easy for them to locate and select which class they would like to enroll in.

AI Pose Detection

I intended to utilize Teachable Machine to train an AI model to detect a user's poses and validate that it matched the expected dance move. For each dance move, I planned on creating a pose for each step required to satisfy the requirements, however, once I completed that for the first evaluated move, I realized that the interface, which cannot be customized without JavaScript knowledge, was too overwhelming with all of the confidence scores per step moving around. I also noticed that the moves were too similar, so without model refinement and dramatized motions from the user, it was not a great user experience. Lastly, Teachable Machine

pose models are more intended to assist detection of singular poses and not really a series of poses that if all completed satisfies a greater requirement. For these reasons, I did not leverage a trained model, but instead portrayed via Wizard of Oz prototype technique, what it conceptually would look like if the technology were more advanced.

Evaluation

Due to time constraints, I was not able to recruit participants to provide feedback on this design. Alternatively, I decided to conduct the usability testing on my own by creating prototype connectivity in Figma between elements to act as real buttons and pop ups as part of the flow. While more feedback is needed to incorporate various perspectives in the future, I feel comfortable with the notes I made for myself at the end of my design process since I have experience and expectations for enrolling in dance classes online.

Favorite elements

- QR code to switch to a different device as this offers flexibility, especially considering the user might not have entered this flow knowing it would be a component.
- Evaluation being embedded into the site and no further account creation or anything is required. Makes the process feel truly seamless.
- Logic incorporated to assess which evaluation the user should take and only highlighting the classes eligible for the user based on profile/evaluation records. This prevents them from evaluating for an inappropriate level or signing up for a class that is not suitable.
- Listing out exactly which moves will be evaluated before entering the evaluation. Helps the user understand how this studio defines that level since all studios have different definitions. Also helps the user determine if they feel ready to take it yet or not.

Suggestions

- “What to expect” section should be easier to skim.
- Incorporate audio instructions for the virtual dance evaluation.
- Larger written instructions on the B(AI)LAR evaluation screen since it may be far away from the user.
- Provide an option to play a bachata beat during the evaluation since most in-person ones have music playing.
- Easy way to come back to the evaluation if the user cannot complete evaluation right at that moment.

Concerns

- I had to change my black shorts to orange shorts since the camera was not able to clearly see my legs since the couch in the background was also dark in color. This may cause the user inconvenience or make the system inoperable.
- It is unclear what the system would do if a user made a move incorrectly. Would it allow them to retry, or do they only get one chance?
- There is a lag in the video, but I do not recall one when I danced live. I would want to ensure that there are not any latency issues as they may distract the user and corrupt their results.
- While there are visible blue lines representing what body parts the system recognizes, there is no confidence score nor way to flag the system if the user is doing something correctly but B(AI)LAR does not recognize it.

Reflection

Overall, my design process worked successfully in creating a proof-of-concept prototype where users can bypass an in-person dance evaluation by completing it online with AI pose recognition. The only thing that I wish I realized sooner was that it probably would have been easier to edit more of the changing directions during the evaluation in the video in ClipChamp rather than creating individual Figma wireframes. This created a lot of manual effort in cropping videos to the exact frame to ensure everything looked seamless. If I had just left the instructions out of the wireframes and just had the one dance clip as a continuous then added the directions in ClipChamp it would have been easier to pull everything together. I learned that Teachable Machine was helpful here only for Wizard of Oz prototyping but that more technologists would need to assist in developing a viable product and incorporating studio owner requirements.

In talking to my dance instructor, I also learned that his evaluation for a coveted dance instructor certification will be conducted via Zoom since the only in-person option is in Barcelona, Spain. I was intrigued to hear this since I thought a fault in my concept was the physical barrier, such as not being able to feel the tension in a user's frame which is critical to partnered dances. If one of the most elite certifications can be done over Zoom, I think I am onto something here and would be interested in seeing what I can do with it after further development.