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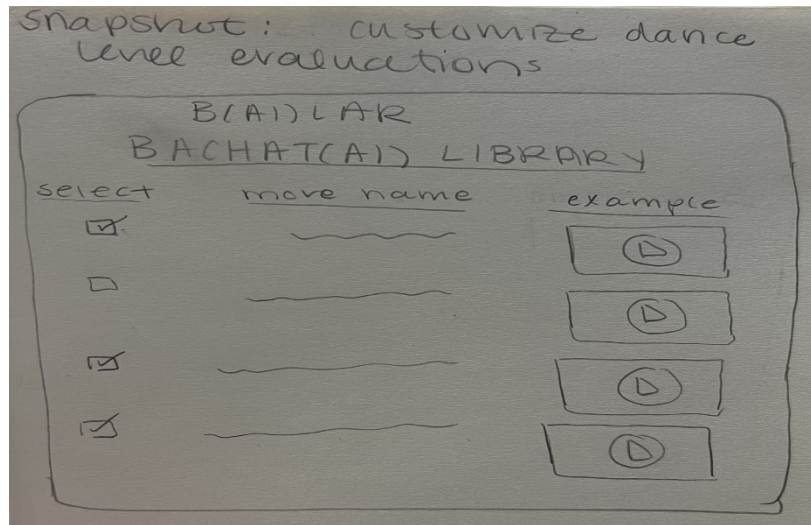
Conceptual Design: B(AI)LAR, AI Dance Skill Level Assessor

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 will outline the conceptual model for the system, discuss ethical issues in the design, and provide rationale for the design choices being made.

Conceptual Model

B(AI)LAR is a virtual solution to eliminate the physical step of students going to a dance studio for a skill level evaluation before they can enroll in and attend a dance class. In essence, the system is configured of various libraries of dance rhythms, such as ChaChaChAI, BachatAI, and SalsAI, that maintain a database of coded dance movements critical to each rhythm where it can recognize and characterize human motions with their respective dance movement. Dance studios that elect to leverage B(AI)LAR will be able to customize their package with which rhythm libraries they will need and have the ability to embed the system into their existing studio website. The ability to customize will increase the value proposition of the system as dance studios vary in what classes and rhythms they offer. The dance studio directors will be able to design their dance skill level evaluations by selecting from a list of dance movements in the library (see below). The list format is designed with the intention of simplifying the process for the directors so that they can easily select or de-select whichever dance moves needed for that evaluation. If the movement name is unclear to the user, there is also a supplementary video demonstrating the move. By providing a video demonstration of the movement, it also provides more transparency to the director on how the system has been coded to recognize and characterize those movements. If, by chance, the dance movement in the system differs from how the dance studio would expect it to look, they can choose to omit it and or work with the system to get what they were expecting added to the library.



Once embedded, B(AI)LAR will create a fully self-service enrollment process by allowing students to execute their evaluation from wherever and whenever by dancing in front of their webcam. This provides flexibility to the students as it removes the requirement of coordinating a time with the studio and physically commuting there to complete the assessment, saving them time and effort. Students will go through an enrollment flow (see below) where they will elect to enroll in their desired dance rhythm, answer a basic question about their experience with the selected rhythm, the AI will use logic to suggest a general skill level (Novice, Beginner, Intermediate, Advanced, etc) and then propose an assessment to help determine which class within that level is most appropriate. The basic questions about their experiences serves to vet out the student and initiate a baseline assessment to start the recommendation process. The following screen explaining the general level where the dancer might be based on the their experience keeps the user in the loop with where the next steps of the process are coming from. By specifically calling out the level and the studio's definition of dance moves expected at the level, the student user is also able to see how that studio defines that level since it can vary by studio. The user interface (UI) will display instructions and the dance moves the studio is looking for at that level so that the user understands what they will be prompted to do in front of the camera. This will help them mentally prepare and feel confident entering the assessment. They can click to start the assessment or they can click to schedule an in person assessment. While the goal is to get more users through the AI assessment, the option to schedule a traditional, in person assessment was deemed important to continue to offer as the studios should accommodate to their guest for whatever reason they might not want or be able to do the online assessment.

Once they start the assessment, their webcam or mobile device camera will activate and the UI will display the requested dance movement and monitor the user's movements and validate if the movement requirements are met. If so, a green check mark will display in the corner and the UI will display the next requested dance movement until the assessment is complete. The assessment is complete when the user has attempted all of the dance moves that

the studio assigned to that level evaluation. Lastly, B(AI)LAR will store the assessment details to the student's profile for future reference and will incorporate logic determined by the studio as to which class best meets the needs of the student based on the successful moves completed through the assessment. The user will be presented an explanation and the class option to add the class to their cart.

Storyboard 1: Enrollment flow on studio site w/ BAILAR

step 1: click enroll

Dance Co.

HOME **CLASSES** FAQ CONTACT

• ChaChaCha • Bachata • Salsa

overview

Schedule

Enroll

[Click here to enroll](#)

step 2: select experience

Dance Co.

HOME **CLASSES** FAQ CONTACT

Enroll in Bachata

1. What is your experience with this rhythm?

a. no experience
b. 1-5 months
c. 6-11 months
d. 12+ months

step 3: initiate evaluation

Dance Co.

HOME ~~CLASSES~~ FAQ CONTACT

Enroll in Bachata

Based on your selection, a beginner level course may suit you best.

Let's figure out which one with a quick evaluation!

The skill level assessor will display the name of the below dance moves.

You will be required to turn your camera on as the technology will be able to validate your dance movements.

Beginner level moves:

• ~ ~ ~ • ~ ~ ~ • ~ ~ ~
• ~ ~ ~ • ~ ~ ~ • ~ ~ ~

[CLICK TO START](#)

OR

[Schedule in person assessment](#)

step 4: conduct assessment

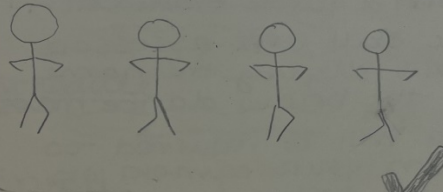
Dance Co.

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Enroll in Bachata

Beginner Level Assessment

☒ 1. Please do a basic step.



step 5: Logic recommendation

Dance Co.

HOME **CLASSES** FAQ CONTACT

Enroll in Bachata

Assessment complete - Thanks!

Based on the moves validated, we think Beginner 3 will be an appropriate starting place!

[Add to cart](#)

Ethical Issues

For the benefit of B(AI)LAR to truly be to the benefit of the dance studios and their students, it is important to face any ethical issues with the design solution head on. Four main areas of concern that have been identified include: diversity, data management, transparency, and deceptive use of the system. First, to ensure fairness in the accuracy of the AI assessor, it is critical for the machine to learn from a representative variety of body types and skin tones. B(AI)LAR should be able to recognize the same core characteristics of each movement despite what the user looks like. Second, B(AI)LAR must protect users privacy and enforce data protection. Since the system requires users to activate their webcam, the system must ensure that it has permission from the user to do so and that the user is presented with the how the capability is going to be engaged. Likewise, since a benefit of B(AI)LAR is the ability to store the assessment results, only the most pertinent information should be stored and accessible only to the authorized users. Third, B(AI)LAR will exercise transparency in the user experience by providing video demonstrations of what each move is to the directors selecting the dance moves for evaluation, providing a list of dance moves to the user before they start the assessment, signaling to the user real-time feedback of success during the assessment, and providing an explanation as to the suggested class based on the recommendation. By feeding the user with this information, they are able to critically assess if anything stands out as inaccurate and can then raise this to the appropriate resource. Lastly, since B(AI)LAR will not incorporate facial recognition features, there is the risk that users might have someone else execute the assessment on their behalf. Considering the potential privacy implications facial recognition, implementing that feature would bring on too much risk as the consequence of deceptive use of the system only hurts the student themselves. That is, if they were to have someone more advanced dance on their behalf so that they could receive a higher class recommendation it would theoretically work, but when they show up to the studio and take that class, they will not be in the a class appropriate to their skills so it is not in their best interest. There is no material risk to the dance studios for users who deceptively use the AI assessment as such, however, the dance studios could incorporate this into their company policies to prevent this from happening or protect themselves from inapt negative feedback on the class difficulty.