

Contextual Inquiry-Group:Elephants

From CS160: User Interface Design Sp12

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Who We (Group Elephants) Are and What We've Done

- Danube Phan - did sketching, contributed to writing answers for competitive analyses and descriptions of scenarios for tasks
- Rohan Ramakrishnan - Wrote the interview questions, compiled the interview answers into the answers for the task analysis questions, brainstorming.
- Timothy Zhu - Did sketching and some of the competitive analysis, brainstorming.
- Danny Tan - Danny is the man who knows ballroom dance. He helped us get into contact with all of our interviewees and conducted interviews. Wrote Target Users section, Contextual Inquiry - Interview Descriptions section, and Analysis of Tasks section.
- Elena Gasparini - Did one of the sketches, contributed to competitive analysis, helped answer task analysis questions, brainstorming.

We all met together multiple times to plan and discuss, with everyone attending every meeting. We all contributed to the creation of this page together.

We changed our idea from the group brainstorm idea - which was a automated gas-shutoff app - because we found out that that idea was infeasible, as it is impossible to directly access the Kinect's IR sensor, which

uses structured IR. Instead, we switched to a ballroom-dancing app as we thought that that was more of a Kinect-friendly app that would make better use of all of the Kinect's affordances.

Target Users

Target users are beginner amateur competitive ballroom dancers. They are more likely to use the Kinect application than social dancers because competitive dancers focus more on improving the look of their dancing and less on learning many dance moves/figures. Amateur dancers are also more likely to use the application than professional dancers because at the professional level, dance moves/figures are less standardized and improvement at that level would require working on subtleties that the Kinect application cannot pick up or are difficult to implement. For amateur dancers, the feedback is more standardized because of the concrete syllabus of dance moves/figures and more visible mistakes.

Target User 1:

- Male, college student
- Has been ballroom dancing for 2-3 years
- No dance experience prior to ballroom dance
- Computer Science and Linguistics major
- Enjoys social dancing
- Okay with competing in dance competitions
- No longer takes group dance lessons and no longer learns new figures but works more on technique
- Has trouble realizing the relative spatial positioning of different body parts
- Has tried dance games before on Wii

Target User 2:

- Female, college student
- Just started ballroom dancing this past year
- Has other prior dance experience
- Economics major
- Prefers Latin Ballroom dancing (Latin dances are Cha-cha, Samba, Rumba, Paso Doble, and Jive)
- Has part time job and undergraduate research assistant position
- Competes in dance competitions
- Has not tried other dance applications/games

Target User 3:

- Male, college student
- Started ballroom dancing 1-2 years ago
- No dance experience prior to ballroom dance
- Classics and Astrophysics major
- Finds Standard Ballroom dancing more natural (Standard dances are Waltz, Tango, Viennese Waltz, Foxtrot, and Quickstep)
- Does not consider himself to be good at dancing
- Did not compete last semester
- Did not have a dance partner for at least a semester and is currently in a new dance partnership
- Has not tried other dance applications/games

Problem and Solution Overview

Problem: Ballroom dancing essentially requires the dancer to have a partner/teacher to show them what they're doing wrong and how to fix it, making it very difficult for the dancer to practice moves if they are by themselves (i.e. at home). This can be an issue if the user does not know many ballroom dancers, cannot attend classes for whatever reason, or simply wants more practice on their own.

Solution: Make a Kinect app that allows people to get a similar kind of feedback as they would normally get from a dance instructor/partner, allowing them to practice their dance moves by themselves.

Contextual Inquiry - Interview Descriptions

We used a google form to get initial responses from individual amateur competitive ballroom dancers on the Cal Ballroom Dance team. We used this as the starting point for some informal conversations with the individuals for them to elaborate on their responses. Some followup comments were added to the record of responses. Questions asked were tailored to fit the target group. Responses were targeted toward someone who has knowledge of how the ballroom dance team runs. The questions asked were:

- What tasks and/or actions must you perform when learning ballroom dance figures/positions? What must you learn to do with your body? What do you need to learn mentally?
- What tasks and/or actions must you perform when learning ballroom dance figures/positions? What must you learn to do with your body? What do you need to learn mentally?
- Where do you learn dance figures? When and how often do you learn them? How do you learn them?
- What other resources do you use for learning ballroom dance? (e.g. books, videos, other instructions/lessons, etc.)
- How do you communicate with your partner when learning new dance figures?
- Do you feel pressure to learn new dance figures quickly? Explain your answer.
- What happens when you miss a lesson involving a new dance figure? What happens when you learn a new dance figure incorrectly?
- What is most difficult about learning ballroom dance? What is easy about learning ballroom dance?
- How skilled do you think you are at ballroom dance in comparison to others?
- How useful do you think dance games (on Wii/PS3/Xbox, e.g. DDR) are in learning ballroom dance? Please specify any dance games you have played.
- If you were to use a Kinect application to learn ballroom dance, what would you want the Kinect application to be able to do? Be as specific as you can.

Here is the google form used for collecting initial responses: <https://docs.google.com/spreadsheets/viewform?formkey=dFZtZ1E1OVk2U19ZMVpueW0taWI4N3c6MQ#gid=0>

Here is a spreadsheet containing the inquiry answers: <https://docs.google.com/spreadsheets/ccc?key=0App12GN6QZxCdFZtZ1E1OVk2U19ZMVpueW0taWI4N3c#gid=0>

Individuals were also observed learning dance in a ballroom dance class in Hearst Gym as well as in one-on-one instruction/review in Wheeler Hall.

- Common tasks and themes
 - Users have a relatively strong desire to improve their dance technique, not just learn new dance moves.
 - Users worked almost exclusively with actual people to learn dance moves and technique; occasionally they would use YouTube, but not often
 - Users were more interested in learning the dance moves to their satisfaction than in making any sort of deadline

- Very few users had played dance games, but almost all of them were dubious about the usefulness of those games in actually teaching dance moves.
- Most interviewees had little or no dance experience prior to ballroom dance
- Interviewees were of different amateur dance levels (beginner, intermediate, advanced), but this was desired because we wanted to have input from people of different skill level to see if the application would be useful for each of them. Interviewees of different skill levels still responded similarly.
- Some interviewees find learning new dance moves/figures difficult, but most find learning technique to be more difficult. The reason for this is because steps and movements can be copied easily by most people, but technique requires a deeper understanding of the movement in order to be able to execute it correctly. Those that tend to find new dance moves/figures to be difficult to learn may have a more difficult time processing movements visually, but can understand the movements better when they are broken down in manageable chunks.

Task Analysis Questions

1. Who is going to use the system.

Amateur ballroom dancers, i.e. beginners to ballroom dance.

2. What tasks do they now perform.

Various dance moves, involving knowing where to step, where to move, how to hold your body while doing so, and the timings of all of these moves.

3. What tasks are desired.

To be a better dancer, more easily remember dance moves, and have more awareness of their body

4. How are the tasks learned.

By practicing the moves repeatedly in front of an aid.

5. Where are the tasks performed.

At home, at dance class, in the shower, and in actual ballrooms.

6. What is the relationship between user and data.

Dancers learn the dance moves and positions, increasing muscle memory.

7. What other tools does the user have.

Dance instructors, fellow dancers, books, and occasionally Youtube.

8. How do users communicate with each other.

They mostly communicate by watching each other and then pointing out the flaws/ showing each other what the moves should look like if done correctly.

9. How often are the tasks performed.

Several times a week, for approximately two hours each time.

10. What are the time constraints on the tasks.

Preparing for competition is the only real time constraint; otherwise users are more interested in simply learning how to dance better.

11. What happens when things go wrong.

Ask a partner/friend/teacher to show them the correct dance moves, then repeatedly practice those.

Analysis of Tasks

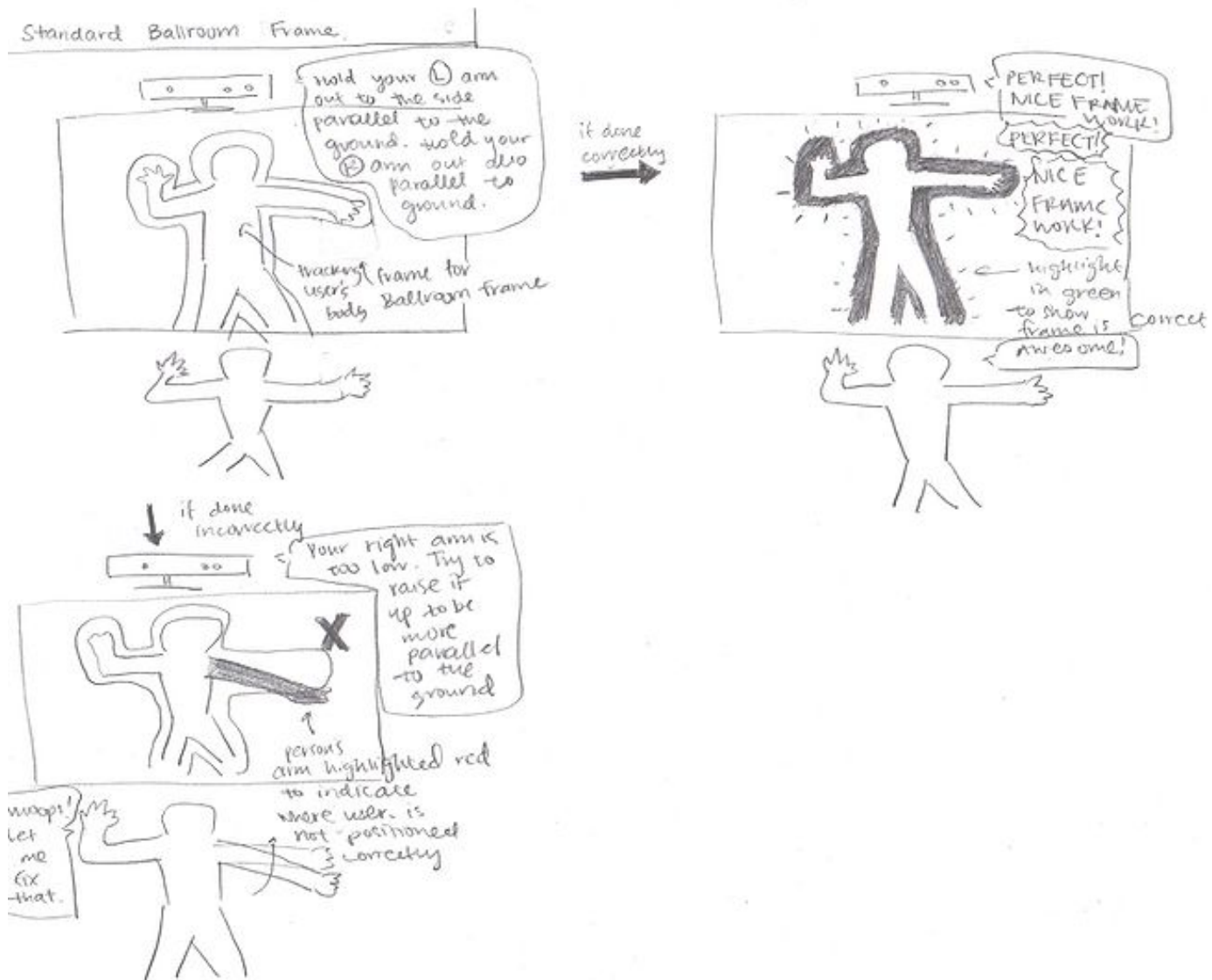
Choose 6 tasks (2 easy, 2 moderate, 2 difficult tasks) and describe them. These should be real world tasks that have details.

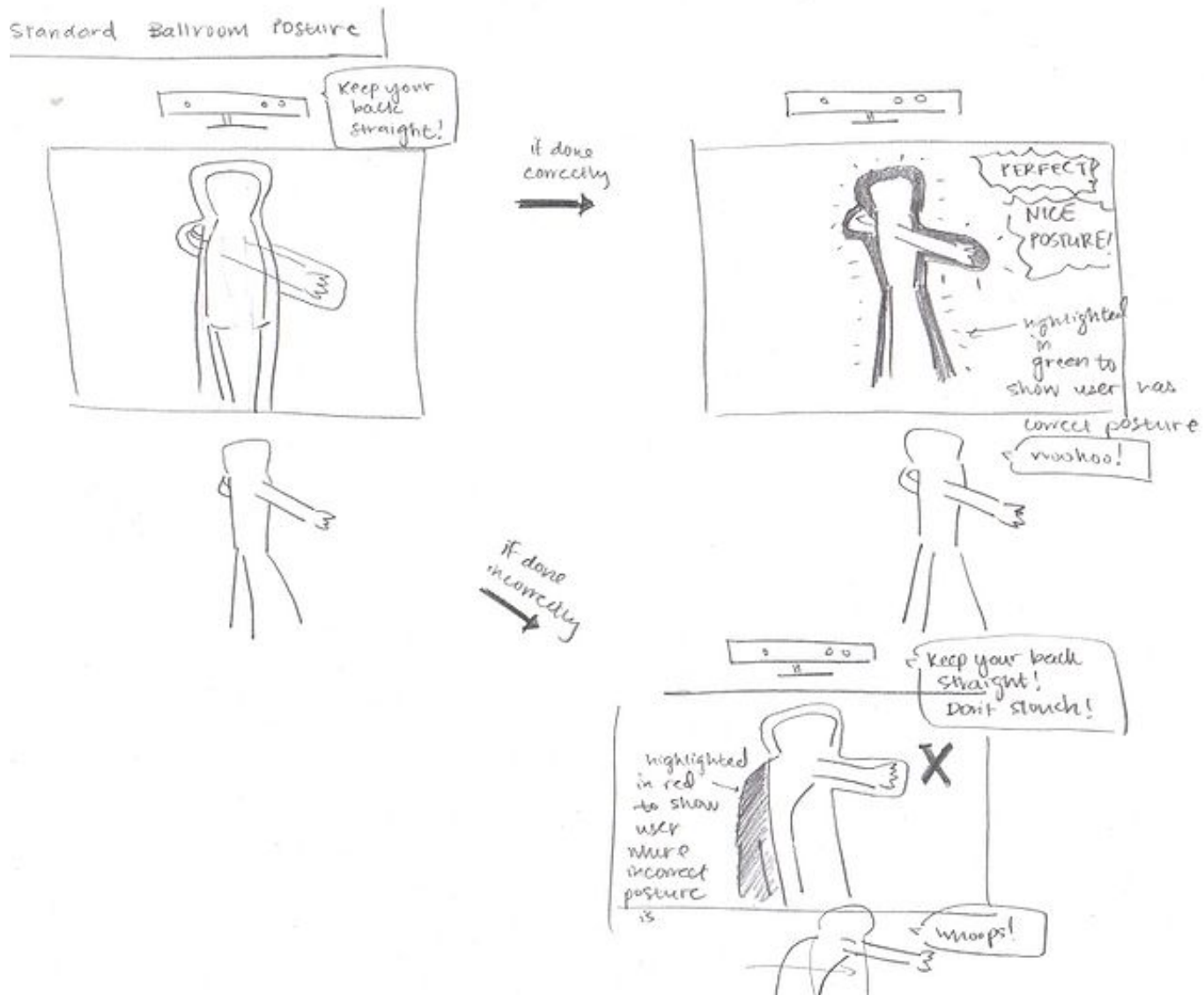
- EASY - Learn standard ballroom frame/posture (i.e. how you are supposed to look when preparing to dance)
 - Need to learn key points in having good ballroom posture and frame
 - Need to be able to demonstrate good posture and frame
 - Need to be able to keep good posture and frame for an extended amount of time
- EASY - Learn standard ballroom frame/posture with a partner
 - Need to learn key points in having good ballroom posture and frame in relation to a partner
 - Need to be able to demonstrate good posture and frame in relation to a partner
 - Need to be able to keep good posture and frame in relation to a partner for an extended amount of time
- MODERATE - Learn a basic stationary (non-travelling) dance figure (e.g. box step in Waltz)
 - Need to learn key points in dancing a basic stationary dance figure: timing, footwork, amount of turn, etc.
 - Need to be able to demonstrate the dance figure well (be on time, have correct footwork, turn the right amount, etc.)
 - Need to be able to keep good posture and frame while dancing the figure.
 - Need to be able to perform the dance figure consistently well
- MODERATE - Learn a basic stationary (non-travelling) dance figure with a partner
 - Need to learn key points in dancing a basic stationary dance figure with a partner, especially leading and following
 - Need to be able to demonstrate the dance figure well with a partner (be on time, have correct footwork, turn the right amount, etc.)
 - Need to be able to keep good posture and frame in relation to a partner while dancing the figure with a partner.
 - Need to be able to perform the dance figure consistently well with a partner
- DIFFICULT - Learn a dance sequence (e.g. Cha-cha basic, New Yorkers, Underarm turn)
 - Need to learn the order of the dance figures in the dance sequence
 - Need to be able to demonstrate the dance sequence in the correct order

- Need to be able to keep good posture and frame while dancing the sequence
- Need to be able to perform the dance figures in the sequence consistently well (be on time, have correct footwork, turn the right amount, etc.)
- Need to be able to perform the dance sequence consistently well
- DIFFICULT - Learn a dance sequence with a partner
 - Need to learn the order of the dance figures in the dance sequence and how to lead and follow the figures
 - Need to be able to demonstrate the dance sequence in the correct order with a partner
 - Need to be able to keep good posture and frame in relation to a partner while dancing the sequence with a partner
 - Need to be able to perform the dance figures in the sequence consistently well with a partner (be on time, have correct footwork, turn the right amount, etc.)
 - Need to be able to perform the dance sequence consistently well with a partner, especially be able to lead and follow the sequence

Interface Design

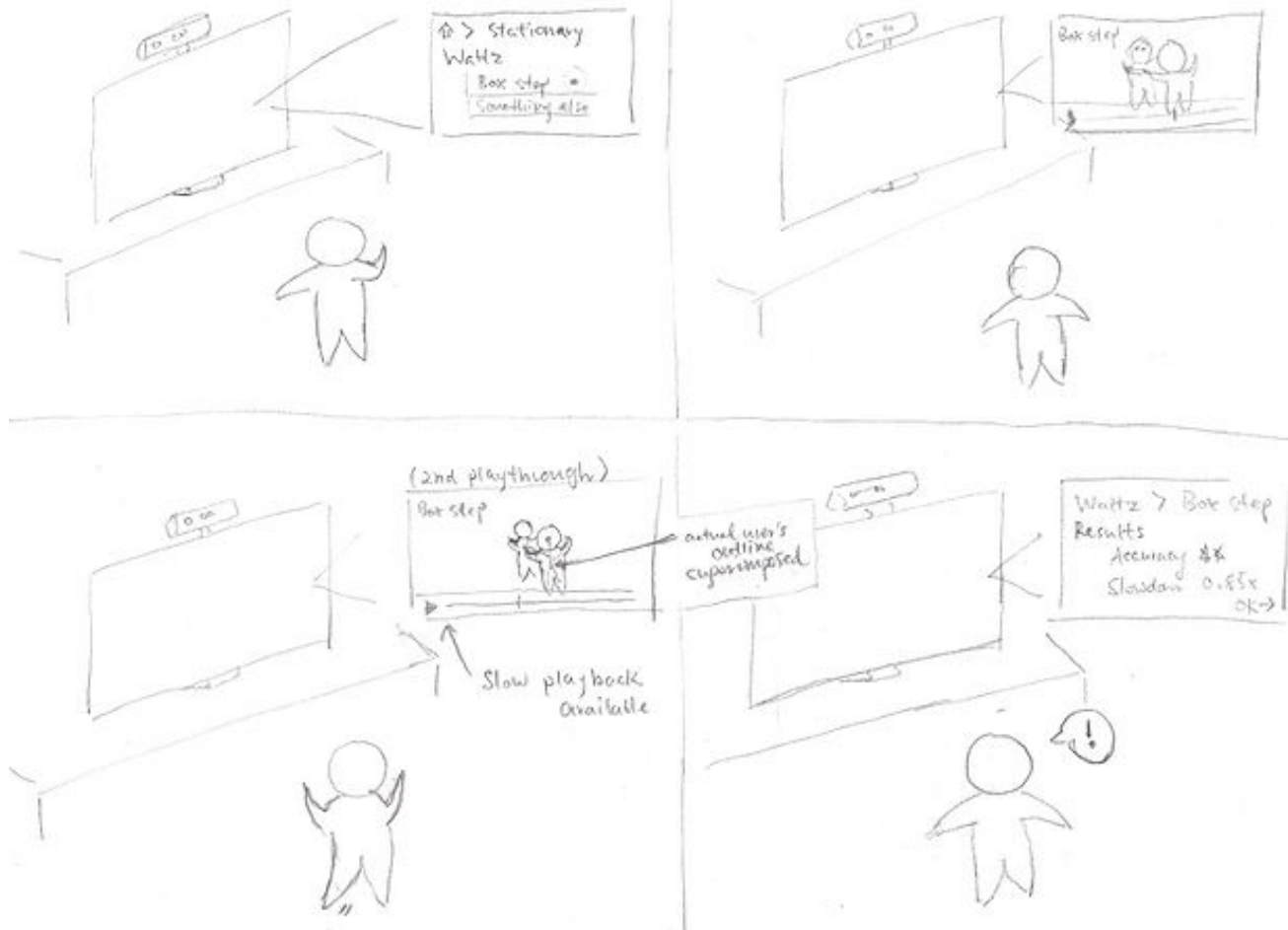
Three Scenarios:





- An easy task is the user trying to learn the correct way to form a standard ballroom frame and posture. The TV screen will show visual feedback of body tracking from the Kinect and a correct frame for the user to achieve correct form for ballroom frame. The user can check if their posture or positioning of their limbs conforms to the framework displayed. The user will also have audio feedback instructing user to correctly form ballroom frame/posture. If it's correct, the frame could be highlighted green and display feedback to show the user did the frame/posture correctly. If it's incorrect, the portion where the user is not in the frame can be highlighted red and display feedback to show user where the user is not doing frame/posture correctly. The user can then correct their frame/posture until it's correct.

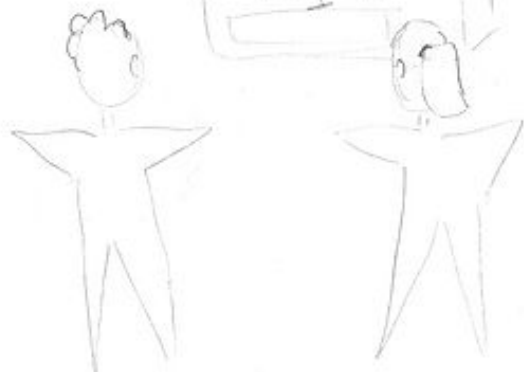
Basic stationary dance figure.



- A moderate task will be a stationary dance figure. Users will first be shown a demonstration video. Then, they will go through the video and do the figure in synchronization with the video. The video will be shown in a small box in the corner, and the user with a joint overlay of the ideal position will be shown on the main screen. The user can change the playback speed. At the end of the demonstration video the user will be shown statistics relating to how accurately the user's motion was, and how much slowdown on average the user set. The goal for the user would be to have high accuracy against the ideal recorded skeleton model, while having no slowdown (1.00x speed).

LEARN THE WALTZ UNDERARM TURN - A DANCE SEQUENCE WITH TWO DANCERS

DEMONSTRATION VIDEO



First a demonstration is played with explanation

first, get into the starting position

great job!



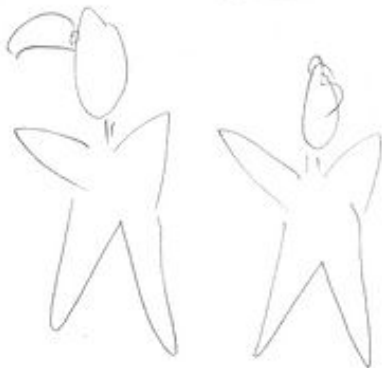
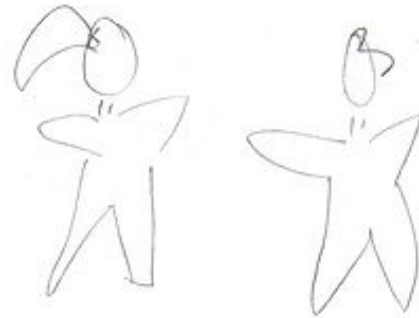
Begin the Box Step. 1, 2, 3, 1, 2, 3...



users learn individual steps in the sequence prior to putting them together in a sequence.

UNDERARM TURN. 1, 2, 3...





- A difficult task will be a dance sequence with a partner. Users will put together a sequence of moves after having learned individual moves. First, users will be shown a demonstration video. Then they will slowly be walked through steps in the sequence to a rhythm counted out by the application. An image of the goal dance positions with the users skeleton's actual movements overlaid is shown on the screen. After walking through the sequence slowly, the program will replay the video of the users performance and provide feedback. After the feedback portion, the users will have the option of continuing or repeating the walk-through. Next the users will walk through again but this time faster and to music. A video and feedback will be provided after the faster walk through as well.

Competitive Analysis

- Dance Masters: <http://marketplace.xbox.com/en-US/Product/DanceMasters/66acd000-77fe-1000-9115-d8024b4e081e>
 - **Target User Group** People who want to have fun with some songs they know; this differs from our user group in that these users do not want to learn a specific set of dance moves.
 - **Functionality:** This app offers a variety of different songs and moves geared towards those songs; our app will be more focused on teaching dance moves regardless of song.
 - **Usability:** This app can only be used to learn the specific dance moveset provided for each song; our app will be able to teach a variety of dance moves.
- Just Dance 3: <http://marketplace.xbox.com/en-US/Product/Just-Dance-3/66acd000-77fe-1000-9115-d80255530888>
 - **Target User Group** The target user group is people who want to have fun dancing to popular songs; they are not attempting to learn specific dance moves. This is different from our target user group as our target user group is mostly interested in improving their ballroom dancing along with also having fun.
 - **Functionality:** This app offers a variety of different songs and moves geared towards those songs; our app will be more focused on teaching dance moves regardless of song.
 - **Usability:** This app can only be used to learn the specific dance moveset provided for each song; our app will be able to teach a variety of dance moves.
- Michael Jackson The Experience: <http://marketplace.xbox.com/en-US/Product/Michael-Jackson-The-Experience/66acd000-77fe-1000-9115-d80255530851>
 - **Target User Group** Michael Jackson fans and people who want to learn MJ's dance moves.
 - **Functionality:** This app offers a variety of different Michael Jackson songs and moves geared towards those songs; our app will be more focused on teaching dance moves regardless of song.
 - **Usability:** This app can only be used to learn the specific dance moveset provided for each song, and the songs are limited to Michael Jackson's discography; our app will be able to teach a variety of dance moves.
- EA Sports Active 2: <http://marketplace.xbox.com/en-US/Product/EA-SPORTS-Active-2/66acd000-77fe-1000-9115-d80245410911>
 - **Target User Group:** People who want to get active/workout; this somewhat matches dancers since dancing is working out; this differs from our target user group since we are targeting a more specific audience, amateur ballroom dancers, who are looking to learn ballroom dance moves, and not just participate in a general fitness workout.
 - **Functionality:** EA Sports Active 2 keeps track of user's progress toward fitness goals, join workout groups with friends, and follow workout routines to reach fitness goals. Our proposed idea will improve upon the user group's ability to dance well, and provide good visual feedback that is similar to the feedback of a live teaching instructor, not just aiming at attaining general fitness goals.
 - **Usability:**
 - Successes: Any one can use the application in order to reach fitness goals or lose weight,

can personalize workouts, can track progress toward fitness goals to determine success of the application

- Challenges: Not very good audio feedback/encouragement to continue exercises, exercises can get boring, navigating menu is difficult
 - Our proposed idea will allow for users to practice dance moves well by providing good visual and audio feedback similar to that of a dance instructor. We will also improve navigation of menus.
-
- Zumba Rush: <http://marketplace.xbox.com/en-US/Product/Zumba-Fitness-Rush/66acd000-77fe-1000-9115-d8024d4a07e7> review (<http://123kinect.com/review/zumba-fitness-rush/>)
 - **Target User Group:** People who want to do dance exercise for the sake of exercising; this differs from our user group who generally are learning ballroom dancing for the sake of being able to ballroom dance.
 - **Functionality:** The app offers a variety of songs and moves choreographed for those songs; our app will be more focused on teaching dance moves regardless of song.
 - **Usability:** The app fails to provide cues when moves appear; it provides little feedback when moves are executed correctly or incorrectly; our app will emphasize the correct learning of moves through significant feedback to users, not only from improved usability design but also in a fundamental difference in the purpose of our app as a learning tool instead of a fitness tool.

Summary: It seems that there are many existing applications which allow users to learn dance moves to go along with popular hit music. We were unable to find any applications which were geared towards ballroom dance specifically, which sets our application apart. It also seems that existing dance applications are not geared towards improving form and tempo specifically as much as just getting the user to get up and have fun. In this way our target user group is very different than that of most other applications we found. Our application is geared towards users who are aspiring to improve their ballroom dancing abilities whereas most existing applications are geared towards users who want to enjoy a fun and active xbox game.

[add comment]

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