

EVALUATION ASSIGNMENT - 2

CS 5760 – HUMAN COMPUTER INTERACTIONS AND USABILITY

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TEAM 3:E2BIG

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ACL RISK ESTIMATOR - DESIGN

The objective of the web application is to allow its users to record and upload videos of athletes so that it can be later analyzed by medical professionals regarding the possible risks of an ACL (Anterior Cruciate Ligament) injury. The intended users of this app are primarily coaches from the Upper Peninsula region of Michigan, but it can be used by other people such as the parents of an athlete. The whole body is to be captured while recording the video from the front of the athlete. Medical professionals would later assess these videos and provide relevant feedbacks to the coaches about the risk of injury. They can even suggest preventive measures to make the athlete less prone to it. The athlete's performance is quantified and feedback is sent through the web application.

The design of E2BIG includes an interface which has two views, namely the coach view and the medical professional view. The application allows the coach to upload the video and enter the name of the athlete. He can upload multiple videos at one time if he wants to determine the risk of injury for multiple athletes in a team. The medical professional can view the videos and then send an appropriate feedback. The communication part would mostly be done through emails. The coach and the medical professional can register on the application using their email address, username and password. The medical professional needs an activation code so that he is a verified professional. Afterwards, they can just login in the application. The interface of the application is simple and easy to use and involves a minimalistic design.

IDENTIFICATION OF UI DOMAIN

The UI domain for the application falls under the category of Web Based applications. It can be run on computers, but is designed mostly for usage with mobile phones. The user base for the application includes coaches, medical professionals or even parents of athletes. The users are able to create an account on this web based application and then upload videos (coaches) or view and assess them (medical professionals). Feedbacks can be generated through the application as well. The communication part takes place mostly through emails. The User Interface involves simple buttons and textboxes and is kept very simple, yet effective.

HEURISTIC PRINCIPLES APPLYING TO THE UI DOMAIN

As per Jakob Nielsen, the following heuristic principles apply to the UI domain of the ACL Risk Estimator application,

1. **Visibility:** Visibility refers to the system's ability to keep the users informed about whatever is going inside the application. For instance, the user should be informed when the video is uploaded through a pop up message which says so. This tells the user that his upload was successful to the server. Also, there should be appropriate titles to tell the user which page he is on at that instant.
2. **Sufficient Information Design:** There should be sufficient information on the page. It should not be too much or too little information, would not be very useful. For instance, if the textbox is titled "Athlete's name", it is just sufficient. If it is changed to "name" or "Athlete's full name", it provides either too little information or too much.
3. **Consistency and Standards:** The design of the buttons should be consistent throughout the application and there should be no ambiguity in between two buttons having the same name. They should be able to perform the same functionality. Different terminology must not be used to denote the same action. For instance, if there is a "back" button, it's functionality should remain consistent, i.e. it takes the user to the previous page.
4. **Match Between System And Real World:** The system should not be in any language which the user base might not know. Words or phrases from other languages should not be used. For instance, the ACL risk estimator application is based for primarily the coaches and medical professionals in the Upper Peninsula of Michigan, hence the language used throughout the application should be English.
5. **Error Prevention:** By gaining a feedback if the video upload fails, or information is not entered in a certain field, errors that might occur in the database can be prevented. Apart from keeping the user informed, providing a proper manual and designing a robust application can help in error prevention.
6. **Aesthetic and Pleasing Design:** The design of the application should be kept minimalistic and special attention should be given to details such as color and contrast of the application. The text and buttons should be clearly visible, which would make the application easy to use.
7. **User Control and Freedom:** The user should be able to surf through the application easily and be able to go back to the previous page whenever he wants. He should have the freedom to erase text, in case he mistypes in the textboxes. He should thus have complete control and freedom while using the application.

- 8. Help and Documentation:** There should be a proper manual which could help the user out in case he gets stuck somewhere. It should be in a simple and legible language without any technical details.

USABILITY PROBLEMS FROM THE HEURISTIC ANALYSIS

The principles which are currently violated by the application are as follows,

- 1. Error Prevention:** There is no control if the video uploaded is incorrect. If a video is uploaded, the application would take it as the correct video. The user is not able to review the video before it is uploaded. Also, since there is only one textbox titled "Athlete's name" on the page where the video is uploaded, there is no way to identify every video if multiple videos are uploaded at one time. This might result in an error and ambiguity as to which particular video is the feedback for. Also, there isn't a way to prevent the situation in which the professional might give a wrong assessment. Apart from that, there is no current way for the medical professionals to flag a video as inappropriate, if it is so.
- 2. User Control and Freedom :** There is no option to go back to the previous page right now in the application. Apart from that, the user cannot remove a wrongly selected video. This violates the user control and freedom principle since the user is bounded by the limitations of the applications.
- 3. Help and Documentation:** Though there is a small help button at the "video upload" page which tells the user how to correctly upload a video, but there is no help whatsoever on any other pages (for instance the home page). There is no proper documentation describing the various functionalities of the different buttons in the application. There also, should be a "forgot password" link, that would help the user in case he forgets his login password.
- 4. Sufficient Information Design:** One of the problems where there is insufficient information is when there is space only for entering one "athlete's name in the textbox. This can lead to errors or misidentification of the videos later if multiple videos are uploaded at once.
- 5. Aesthetic and Pleasing Design:** The buttons and the background are of the exact same color right now. This might cause a problem to those who are colorblind, hence there should be an appropriate choice of colors, which clearly distinguishes between the background and the button.

CRITICAL USABILITY CONCERNS

Among the above-mentioned problems, there are certain critical usability concerns which should be prioritized over the other issues,

1. One of the most critical issues is that the user does not have any provision of going back to the previous page. Also, there is no way for the user (coach) to review if the video he uploaded is the right one or not.
2. Another critical concern, is when the user (coach) uploads multiple files together, he does not have any way to identify or name each of them distinctly. This can create a lot of confusion when the assessment is done and feedback is sent back. The coach may have some problems identifying which feedback is for which particular athlete.
3. No distinct message or indication if the video upload has failed, is also one of the critical usability concerns. For instance, if the cell phone loses its internet connection while uploading the video, there is no way for the user to know if the video was uploaded successfully or not.

The above three are the highest priority concerns for usability right now and should be dealt with accordingly. The development team can work to solve other usability problems, once they tackle the critical concerns, because they are very likely to hamper the usage of the application.

CRITICAL USABILITY CONCERNS: SCENARIOS

1. Alex Fox is a basketball coach at Houghton High School. He decides to use the application to upload videos of his entire roster for the academic year, to determine the ACL risk to each of his players. He selects all the videos, but sees that there is only one text box which says "Athlete's name". He is now confused as to how to write the name of all the players in that one box.
2. Dr. Susan Grey works at the UP Health Center. She receives a set of fourteen videos from a coach named Alex Fox. Every video has the same title, i.e. the name that the coach put in the textbox. She does rate the ACL risk and writes the feedback, however, she does not know the names of the individual athletes and cannot send a personalized feedback for each of them without causing ambiguity.
3. Kathryn Donahue is the volleyball coach for women at Finlandia University. She records the video of one of her athletes in the gymnasium. The gym is located at a little distance from the main campus and has poor internet connectivity. Donahue uploads the video, and a minute later realizes that she was not getting any internet at that instant, which makes her doubt if her video was uploaded or not.