



# Designing a Player Customizable Character and 2-D Interface for Game Play

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## Abstract

The M.I.N.D. lab, in conjunction with the Center for Health Communication and Marketing at the University of Connecticut, is working to develop a video game that will teach inner-city teenagers and young adults healthy social and sexual behaviors. The project is currently in development and is expected to move to human studies this fall that will assess the ability of an entertaining computer game to impact personal behavior. Research in this project includes technologies for computer game implementation and interfaces, methods for rapid and inexpensive game development, and the potential social impact of games on behavior. The game uses current generation technology to create a 3D environment that will allow users to learn about healthy behaviors in a safe environment. To be more immersive the game allows the user to adjust various aspects of their appearance. The game also contains various user interface (UI) elements that allow the user to interact with the game world through objects that the player would own.

## Problem

This project has involved three different subproblems:

- 1) Determine the best way to modify the model's eye color, skin tone, and clothing.
- 2) Create a set of classes used to generate a UI to allow the user to change the above setting.
- 3) Use an extension of the UI classes to create other game related UI elements.

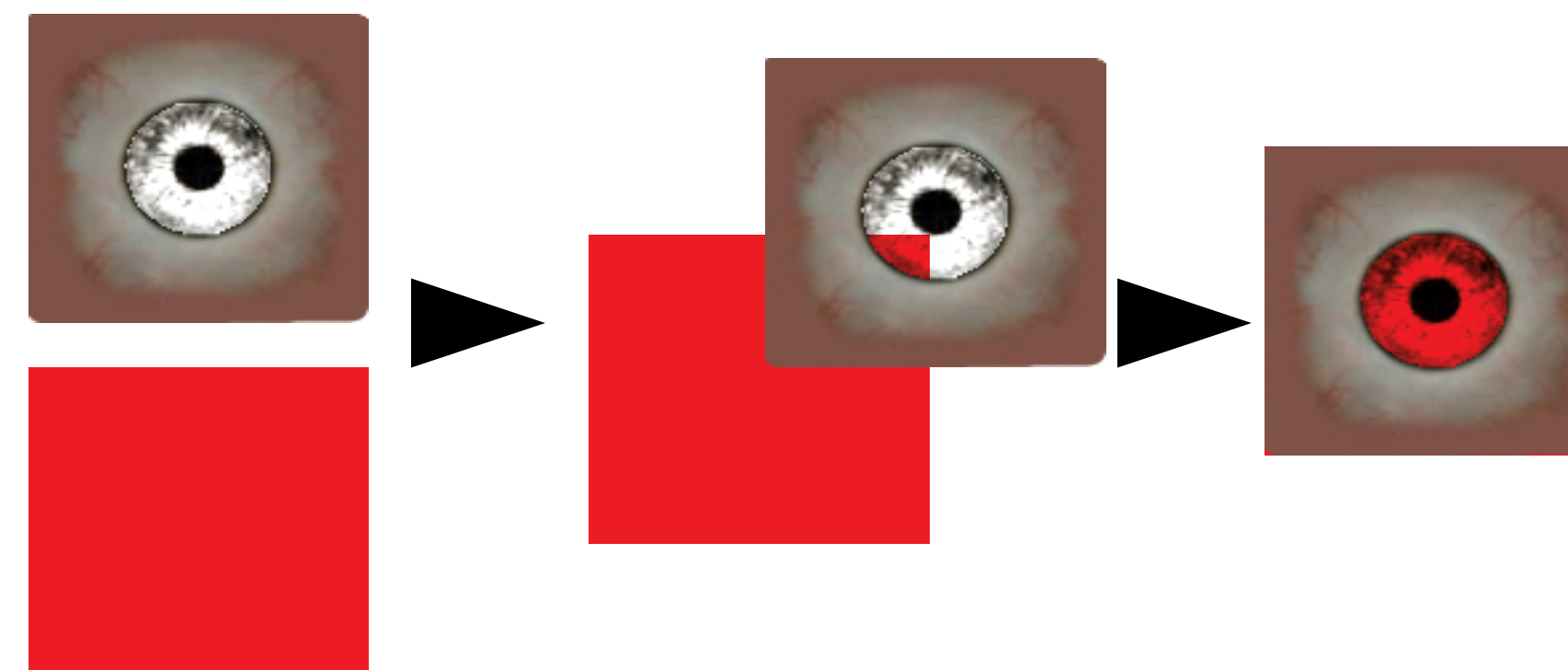
## Clothing

By generating a set of meshes for each individual set of clothing they can each easily be turned on and off to change the clothing.



## Eye Color

Changing the eye color was performed by adding a level of opacity to the image that is used to generate the eye. This allows the game to quickly change the user's eye color by basically laying the eye image on top of the solid eye color. By using this method, the iris retains detail.



## Skin Tone

Changing the player's skin tone was more complicated than changing their eye color due to the fact that the image used to generate the body could contain other elements that have an opacity, like the hair. This problem was solved by generating another image that contains just the regions that would need to change in order to change the skin tone. At runtime this image can be used to generate the correct color value of the skin.



The image on the left is the base image used to render the character. The middle image is used to determine what areas need to have the color changed (any non-black sections of the image are change). The result is the right most image.

## User Interface

In order to allow the user to modify the various user changeable settings it was necessary to create three main UI elements:

- 1) Text Box – To record the user's name.
- 2) Button – To allow the user to confirm their selections.
- 3) Slider bar – These allow for a nearly unlimited selection of skin tones and eye colors while still allowing for the limited number of possible clothing options.

The theory behind each of these elements is essentially the same but their behavior is the major difference. This made it possible to use inherited classes to quickly generate these elements. A single superclass provided most the basic functionality including: the position, the size, the parent/child relationships and the functionality to draw the UI elements.

A class was generated for each component whenever there were differences. The text box class required logic that recorded the keys the user typed. Buttons needed to alert the program whenever they were pressed. The slider class has to keep track of the current value and have the additional logic to draw the slider handle. This was easily done due to the design of the superclass.

## Expanding the UI

The game requires a large number of additional UI elements that have been slowly added. Using the information that was learned while developing the three above elements the development of the additional UI elements has been quick.

