

## Physical Digital Systems in Entertainment

With a car as our vessel and entertainment as our take off point, there was quite a bit to be considered. Using the concept of physical and digital systems, a vast amount of possibilities existed for combining cars and entertainment. The greatest issue at hand is how one may pursue entertainment while being behind the wheel and still practice safe driving. Taking into consideration all the current and possible future innovations of technology, many ideas came to life.

My initial incorporation of keeping the driver entertained was to have some sort of system that could update in real-time through the car's surroundings, then based off that information, can set the environment to be wherever the driver wants to be while still driving to the original destination. In other words, while keeping the traffic and roads the same, the windows could simulate different times and places to keep the driver constantly entertained while still maintaining his view and concentration of the road. This idea emerged from experiences of long distance driving. When being stuck in a vehicle for hours on top of having to constantly focus on the road, it truly is not a pleasant experience. The view is not grand, for the most part is desert and everything the desert possesses. Since our purpose was to provide entertainment, this idea seemed rather effective in terms of keeping the driver's interest peaked. Through this primary idea, factors such as limitations were added. It was time to take into consideration what can and cannot be done. Current technology probably boasts the possibilities of this concept, but for it to become something of the everyday car or let alone a project for class, it was impossible.

The idea of using heads up displays on the windows seemed rather effective. Instead of the virtual reality driving, the car could act as a computer or smart phone whereas it incorporated devices such as web browsers and games to the displays. Using the windows in this way probably wouldn't work too well for the driver as it requires too much attention and distracts from driving but for every other seat can provide a nice way to pass time. However, it seemed rather unfair that the one doing the most work in the car is the only one who is without access to this system. This is where the idea of an artificial intelligence or even an interface that can understand and cooperate with the words and demands of

humans. This addition is similar to what Apple has created recently, the concept of Siri. For the most part, cars aren't the biggest spaces and especially with other people for long periods of time. It would deem most efficient to avoid adding anything that would waste any space. Any form of excess keyboard or mouse type hardware is highly undesired due to the difficulty to operate while on the move, and again, the issue of space. An artificial intelligence that understands could assist its users to use solely their voices without any type of movement. Not only would this be quick and efficient, the driver could also make use of this whereas it is completely hands free and doesn't even require the use of eyes for the most part. For the most part, this became the most probable and on topic idea for use of entertainment through a digital system within a car.

Yes, the idea was solid but again, in terms of something we needed to create for a project, was a bit out of our reach. The intelligence is definitely possible to incorporate, but not to create. Once again, the idea of the heads up display was kept. In this case, the display came via projector onto a window shade. Technology for digital interfaces to be on car glass is being slowly introduced (such as certain speed limit displays on the dashboard to windshield). The window shade was necessary due to issues with clarity on a clear window with constantly changing shades of color behind it makes it rather difficult to keep one's focus on any one thing. The design became attaching a window shade to the wall, using a projector to simulate the heads up display on the window, and a combination of programming technology to create some sort of interaction with the display. Our first attempt was using a combination of Flash and Java to create a simple pong game that's controlled via color tracking. Through much exploration, the trackers worked, but wouldn't communicate properly with the pong game itself. There was clearly incoming signal, the two were definitely talking to each other, but in the game itself, nothing was being changed or affected. The next approach was changing the game and the programming software. Again using the color tracking as the controller, Flash was replaced with Processing and Pong was then replaced with a catching game. (Catching game refers to objects falling and the controller would be the platform or "catcher" on the bottom that gains points through catching the falling objects). This time, Processing seemed to communicate properly with the webcam and our lights. The purpose, or way of playing, would be using different colored lights in front of the webcam to control the movement of the catcher on the bottom.

As objects are caught, points are obtained, missed objects result in loss of life until it reaches the point of zero and the game is over. As a whole, the computer would run the game, the lights would be the controllers, the webcam would track the movements, and the projector would put the game onto the window cover. Referring back to the original idea, all of the processing and software would take place within the vehicle and display on the window of the car. The computer and projector would be unnecessary, the controllers would still work but there are much more innovative methods of controlling with devices such as XBOX Kinect, and Wiimotes. Lastly, in that setup, this game would be obsolete whereas the idea of incorporating a web browser or even a computer operating system would be the ideal system.

Reiterating, the main idea consisted of creating some sort of interface with the help of an artificial intelligence, in order to turn the car into a digital environment and henceforth providing entertainment to the driver and passengers. Incorporating this idea of a digital system within the car, a physical system, demonstrates a hybrid of the two types. Whereas the knowledge and access to technology weren't enough to quite capture that idea, the concept was present in the presentation through indirect means, the conditions were met. The necessary aspects of a digital system are, in this case, accessibility, innovativeness, and effectiveness. The concept of entertainment is certainly provided, it's accessible without necessarily the use of hands, and the idea would allow for many possibilities to branch off from. One might say the use of wearable technology was used in the project through the strap on lights on the hands. The incorporation of digital systems into our everyday physical systems will eventually be the path our surroundings will take toward evolving and innovating towards the future. In fact, a system like this is quite possible with our current technology looking at all the functionality through the smart phones, the touch display, the interface's intelligence, hands free, essentially all the necessary components of this idea. Perhaps in the near future something like this may be implemented and those long car rides will be filled with activities or, as this project was initially about, entertainment.