Heuristic Analysis

COMP140 - Heuristic Analysis

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1 The Controller

The controller is based on the Nintendo nunchuck, this was chosen for marketable reasons. As there seems to ba a lack of PC controllers for use in one hand, it seemed appropriate to use this controller as a baseline. The idea for the controller was to create a one-handed device that could be used in conjunction with a game while being able to free up the other hand. The controller was build using and Arduino UNO and a MakeyMakey kit. As the Arduino UNO does not support HID, the MakeyMakey was used as a bridge between the PC and the Arduino. Two buttons and a joystick were applied to the controller.

2 Analysis

The controller was build for functionality over creativity, to that end everything worked as planned. Both buttons responded to being pressed and with some tinkering the joystick recognized both the X,Y axis. The LED light that was present ensured that the user would know that a button press was being recognized. As this was done through the means of software and not hard-wired into the controller the responsiveness of the

buttons was clearly seen.

Jakob Nielsen set out many heuristics to judge an items usability:

- Visibility of system status

- Match between system and the real world

- User control and freedom

- Consistency and standards

- Error prevention

- Recognition rather than recall

- Flexibility and efficiency of use

- Aesthetic and minimalist design

- Help users recognize, diagnose, and recover from errors

- Help and documentation [1]

The two that would most benefit the controller are:

- Aesthetic and minimalist design

- Flexibility and efficiency of use
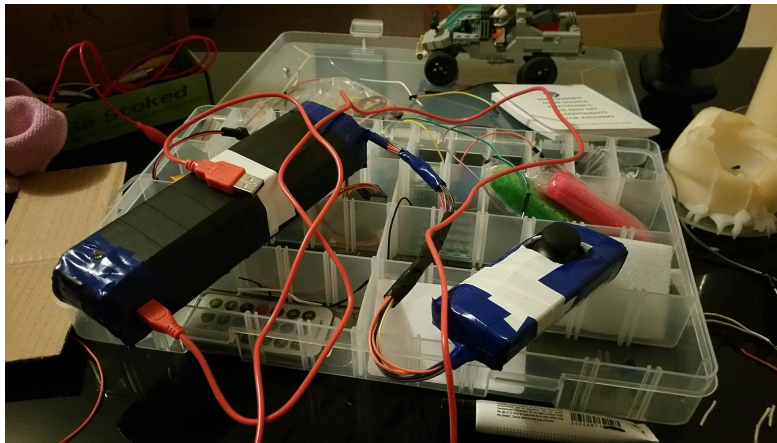
Figure 1: First iteration of controller

Figure 2: Final controller iteration

2.1 Aesthetics

As can be seen in figure one and two, from an aesthetic view, the controller its self was minimalistic, although the circuit boards attached to it made for an unpleasant addition. This was due to the two board having to be connected for the PC to recognize the controller as a HID. A suggestion for improvement here would be to minimise the need for the two circuit board. To do this an Arduino Micro would have been proficient, this Arduino has a built in HID driver and would have removed the need for any wires to be present outside of the controller. This also would have allowed the removal of the

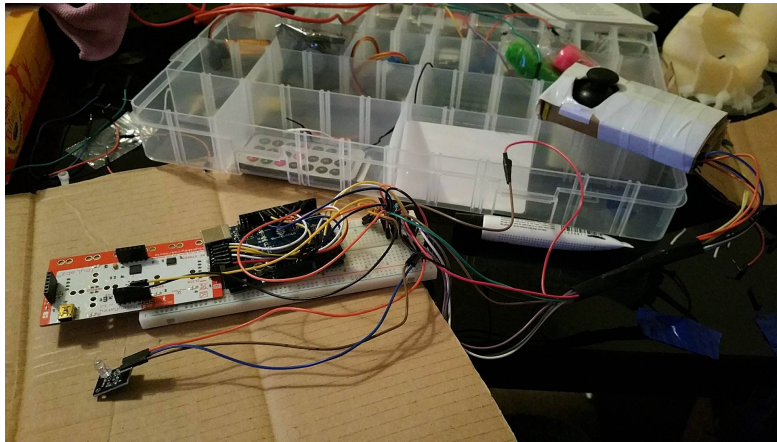large box and improved usability and aesthetics.

Figure 3: Controller Exposed To Reveal Inner Circuits

2.2 Flexibility and Efficiency

The controller was efficient in what it was planned to do, as stated at the beginning, comfortable to hold and responsive. To use, the controller was straining on the hands as the two buttons were placed at the back. Although the lack of extra buttons limited its usability, a suggested improvement would be to increase this number. Also to improve the ergonomics of the controller would be an improvement for flexibility. This would be achieved by altering the position of the buttons at the back.

3 Final Remarks

In retrospect it would have been advantageous to have more usability and comfort for the controller. A lot has been learnt on controller construction and it would go very differently if another was to be built.

References

[1] J. Nielsen, "10 usability heuristics for user interface design [online] at (https://www.nngroup.com/articles/ten-usability-heuristics/) accessed on 15 may 2016," 1995. [Online]. Available: https://www.nngroup.com/articles/ten-usability-heuristics/