AimBOT

Design Specification for the Wearable Pointing Device

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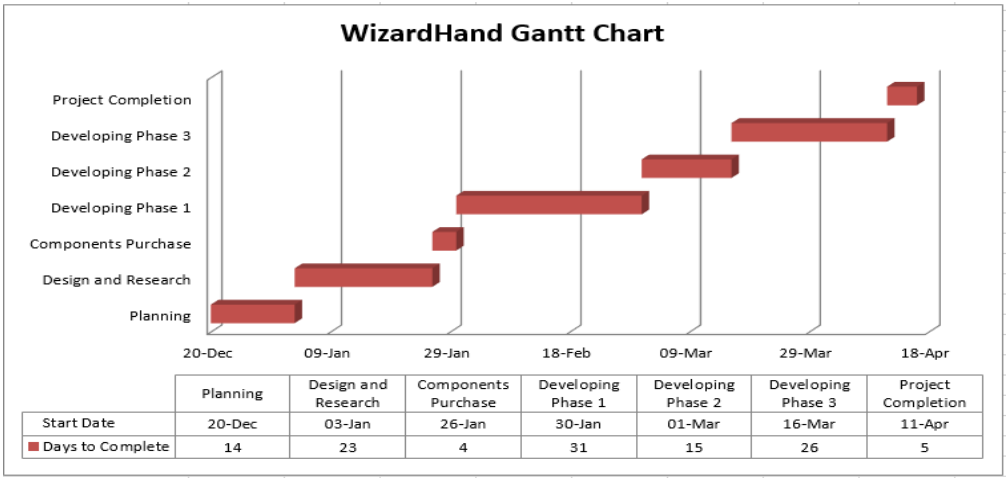
1. INTRODUCTION

AimBot technology has dedicated to the development of the WizardHand system. It is a new generation wearable pointing device with the goal to achieve mouse function with less constraints. It can be comfortably worn on hand like a glove, and it requires no hard and flat surface to control the cursor. Users of WizardHand are able to sit or stand on any desired position with ease, at the same time, control the computer with simple and natural movement of hands. They can also launch customizable functions through a combination of fingers' position. With these innovated ways of communication with computers, we believe WizardHand will bring attractive exciting experience to users, and a new direction to the gaming market.

2. SCHEDULE

Figure 1 and 2 shows the original project schedule and some important delivery dates respectively.



	Planning	Design and Research	Components Purchase	Developing Phase 1	Developing Phase 2	Developing Phase 3	Project Completion
Start Date	20-Dec	03-Jan	26-Jan	30-Jan	01-Mar	16-Mar	11-Apr
Days to Complete	14	23	4	31	15	26	5

Figure 1 - Development Milestones

We followed the original schedule until developing phase 1, all the individual component parts were tested by checking that they were functionally sound, and they were all soldered on a solder-able breadboard before 01-Mar. However, we were not able to finish all the debugging of software functionality within the original developing phase 2, as a result, the developing phase 3 might be shortened or we may extend the date of project completion. As the originally planned, during the developing phase 3, the data communication between software and electronics should be established, approximately 5 days were left for the project testing. By the end of 11-Apr, the project should be completed and ready for demo. Currently, we are on developing phase 3, still trying to figure out the data communication and our project is 3-4 days behind schedule, but the project

demo date we choose is 18-Apr, compare to the original schedule, we have additionally one week to finish our project, so we are still able to complete our project before the 18-Apr.

3. Financial

The following table shows the comparison of the anticipated expenditure and the actual expenditure. So far, the difference is $190. The difference resulted from the damage of components during the soldering and integrating process, as well as comparison and upgrade for a better performance.

Components	Budgeted	Actual	Breakdown
Arduino Microprocessor	58.74	99	23*3+30
Bluetooth module	32.42	162.5	32.42+35+50+46
IMU	25.83	130	
Flexible potential meters	130	60	
Gloves	50	23	13+10
PCB boards and wrings	20	30	
LEDs	5	5	
Vibrate modules	10	10	
Li-on battery	20	27	
Electrical tools	50	50	
Office materials	50	45	
Others	50	50	
Total	501.99	691.5	

Currently, we received $300 funding from ESSEF. As no further funding application planned, we will evenly separate the rest of cost.

4. PROGRESS

4.1. Electronics

Designing and most soldering work of the main circuit have been finished. All components including Arduino Pro-Mini, Charging Cell, IMU, Soft Potentiometers and Bluetooth Module have been tested and function properly. The five digital pins for Soft Potentiometers on Arduino Pro-mini have not been soldered yet. We are able to receive the 14 data from the IMU (9 data) and Soft Potentiometer (5 data) by Arduino processor and transmit the data to PC via wired USB Serial Communication. Remaining work includes soldering the five Soft Potentiometers and configure the most efficient Bluetooth Serial Communication.

4.2. Kit

Development and integration of the kit are currently behind the schedule. Because not all components on the circuit are soldered, the device is not yet ready to be wrapped by the closure.

The kit consists two major parts, the glove and the controller unit, they will be connected together through the strong fabric for signal passing and wear easiness.

4.3. Software

Development and integration of the Software are slightly behind the schedule. The major functions are accomplished. We are able to control the cursor on the screen with adjustable sensitivity by using our device. The design of the UI is finished. The layout of UI is simple and user-friendly. After user opening the application, he/she only need to choose the port name and click “Open” button to begin cursor control.

5. REMEDIATION

With Electronic and Software on track, most of our concentration are focused on configuring Bluetooth Serial Communication and designing the mouse functions and the hot-keys. We spend more time than we expected on researching and developing an algorithm for cursor coordinate position. In addition, because Visual Studio has updated the syntax and function call for C++ form programming, it took the time to get familiar with the new update. However, we only need three days to assemble our product and design the mouse functions and hotkeys. In the rest of the time, we will focus on Bluetooth Serial Communication. In the worst case, a full functioning product with wired communication will be delivered.

6. CONCLUSION

Our company, Aimbot is promised to provide a wearable pointing device. Members of our team showed high enthusiasm on designing this product, WizardHand, which will lead a revolution in the wearable device as well as the area of PCs or mobile phones.

We took several different experiments in order to higher the performance of our product. In the processing of experiments, some damage of components was not avoidable. We also made some substitution on the Bluetooth modules and some other important components, which lead to an increase in the total expenditure.

Due to some issues in debugging of software functionality, we are not able to follow the schedule quite well. We do spend a large amount of time on the software part of our designing. However, we have eventually overcome most of our issues and trying to back on track. We will try our best to finish phase 2 and start phase 3 as early as possible.