



ShowMi Technology Inc.

Progress Report for the

MagicMirror

SHOWMI

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Introduction

MagicMirror created by *ShowMi Technology Inc* is a clothing store assistant product that combines self-checkout function, mirror function and information check function together. The goal of *MagicMirror* plays an important role in any clothing store that helps customers saving time during shopping. Our design has three main parts: double side mirror, central system and a back-end box. The proof of concept model is currently in the assembly stage, once our team assembly three parts to a complete product, we will have test plan. The progress report will outline *Magic Mirror*'s software/hardware progress, financial information, schedule and remediation.

Schedule

We are currently 85% completion of our product. The figure below shows the Gantt chart of our original plan (in red color) and the actual duration (in shadow). The software design and hardware design are completed as scheduled. We had spent more time on the software and hardware testing than we scheduled at the beginning, and the mechanical development is two weeks behind the schedule. Even so, the frame structure design has been completed, and the remaining tasks are the production of the wooden frame and the final product integration. Generally speaking, the process is on track and will be able to complete the project before the demo.

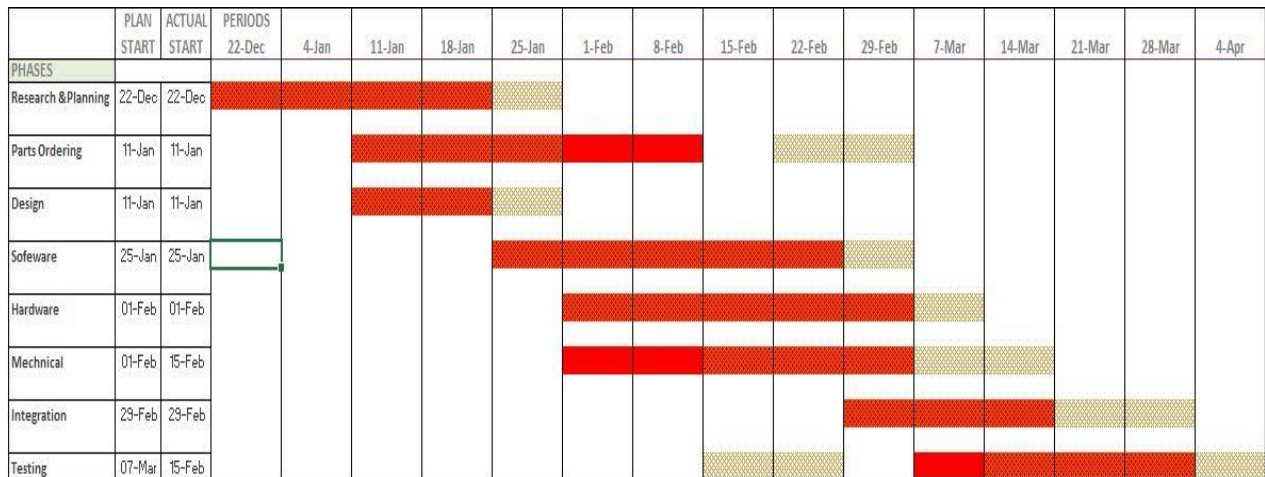


Table 1: Gantt Chart for Planned and Actual Duration for Different Phases

Financial

So far, all the parts ordering is finished. We have spent 87.7% (\$530.5) of our budget and have \$74.5 remaining as shown in the table below. Since we did not apply any funding or sponsors, all the components are purchased as frugally as possible. The table below shows a detailed budget spending and actual spending.

ITEM (\$)	ESTIMATE COST (\$)	ACTUAL COST (\$)	DIFFERENCE (\$)
Arduino Uno (X2)	40.00 (x2)	33.00 (X2)	+14.00

Screw driver set	20.00	22.39	-1.61
Ultrasonic Range Sensor	20.00	19.00	+1.00
USB Cable (X2)	3.00 (x2)	3.05+3.86	-0.91
Bluetooth	30.00	35.00	-5.00
Breadboard Jumper	3.00	2.20	+0.80
Potentiometer	2.00	2.00	0.00
Distance Sensor	20.00	15.50	+4.50
Jumper Wire	2.00	1.75	+0.25
Two-way Mirror	120.00	106.85	+13.15
Barcode Scanner	100.00	78.30	+21.70
Mini PC	100.00	97.00	+3.00
Wood	50.00	48.90	+1.10
Real Sense Camera	50.00	25.00	+25.00
LED	2.00	1.00	+1.00
Total	605.00	530.50	74.5

Table 1: Estimated and Actual Cost Comparison for the Project

Hardware

For the hardware part, we have already successfully controlled the monitor via the distance. The current process is to adjust the brightness and other specifications of the monitor to perform the best performance. At the same time, we start to arrange the wires to make a neat integrated circuit. We still need to test the real sensor camera since the position of the camera will affect the accuracy of operation.

Mechanical Part

Our main mechanical part is to design a fitting box for the mirror, monitor and other electrical components. We have bought wooden boards and started with drawing the orthogonal views of our design. We plan to finish the cutting and the integrating by next few days. In terms of ventilation, we are planning considering several plans to avoid the overheating. These solutions will be tested after the overall system is built.

Software Progress

The program used to capture the hand gesture has been completed. Different hand signals can be successfully obtained and the image information can be used to control the website application. However, hand signals cannot be accurately captured when they are changing really quickly. We are still working on increasing the accuracy of the hand gesture.

The code for the website application has not been completed. The basic functional features, such as check out, check the storage, have been finished. We are right now at the last phase to design the user interface of the website application. Other clean-up tasks like code optimization and additional features will be considered if time permits.

Remediation

If there is more time left, we are considering adding an adjustable ambient light function, which helps customers decide the clothing with different brightness (day/night effects). For the implementation of this function, we will try to use Bluetooth or Arduino to achieve this function. However, as for other parts of the project, we will not sacrifice any other components because all the other components are cores of our project. Nevertheless, improvements for potential better sensors may be implemented as well if time is allowed.

Conclusion

ShowMi Technology Inc completed 75% of the work, and team members all contributed great efforts on *MagicMirror* project. Although our original idea is a home-use mirror, after discussion, we decided a more specific usage scenario which is inside clothing stores. Currently, our team is on assembly stage, so we expect to complete the project and prototype before April 15, 2016, and by then we will be prepared to present *MagicMirror*.