FOYO Technology

FOYO
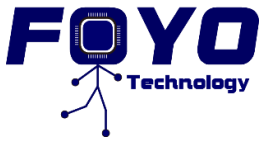
Progress Report for a Smart Cart

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Introduction

FOYO Technologies Inc. introduces an intelligent and innovative shopping cart called *Tesigo* in order to provide a comfortable, convenient and easy shopping experience to the users including pregnancy women and disabled people. Users can operate *Tesigo* in three different modes according to their preferences and situations. The most basic mode is "Manual Mode" which users can operate *Tesigo* as a normal shopping cart. Next, for "Remote Mode", users can control the direction of *Tesigo* via mobile application called "*TesigoApp*". Last mode is the most convenient and intelligent mode, "Follow Mode" which users allow *Tesigo* to detect and follow specific users automatically.

This document describes the schedule, financial and progress of this project.

Schedule

The Figure 1 below is the comparison between the planned schedule previously submitted in the proposal document of *Tesigo* and the realistic schedule. According to this realistic schedule, for the Research section, we keep researching until now since the performance of this project needs to be improved. For Assembly of Modules, we were delayed by almost one week since we had to wait for the motors to be imported from U.S. which also caused a delayed in the Integration/Prototype Testing module. Moreover in Debugging/Prototype Modification section, we have debugged the main components and applied the corresponding modifications. However, we still working on minor changes that may cause a delayed of one week. Overall, we are not too far from the original schedule and we believe that we can complete this project before the demo date.
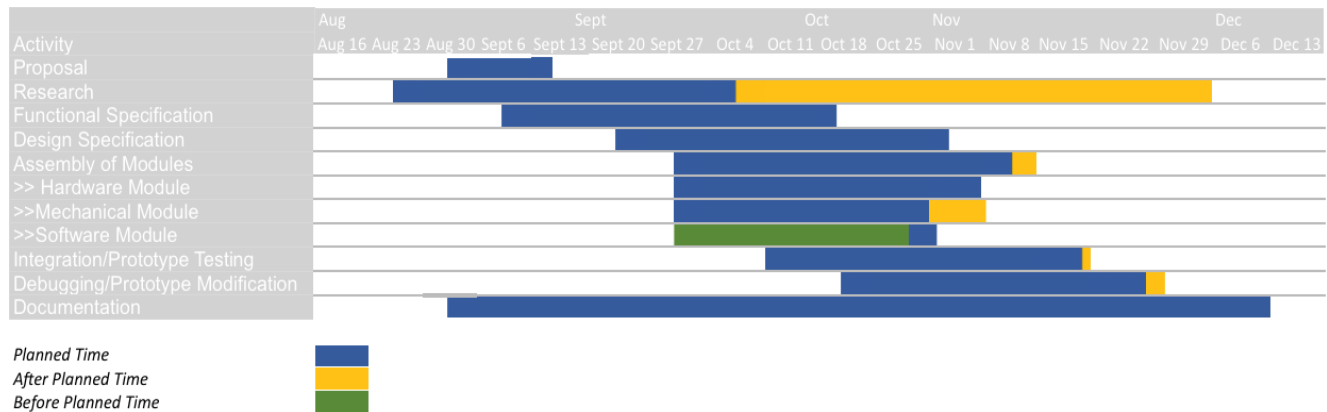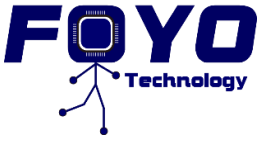

Figure 1: Schedule

Financial

The source of funding for our *Tesigo* project is provided by the team members of *FOYO Technologies Inc,* and we will equally split amount of money among team members. The current expenses as of today is $726.88, which is exceed our budget of $625 for $101.88. In order to improve *Tesigo* performance,

there are still some stuffs we need to buy, and we expect to exceed this amount by around $50.00 when we finish our prototype. The total cost of *Tesigo* should be around $770, which is $145 beyond our budget. Three reasons caused the over budget happened: changing board from Raspberry Pi to Arduino, the previously Arduino board was damaged, and some shipping cost and taxes applied when we ordered parts from U.S. or other websites.

Progress

Mechanical

For the mechanical system, we already built the cart's transmission system and installed the electronics' shelf and Kinect frame. Due to the limitation of the cutting tools, the wheel system does not work properly. One of the problems is about belts do not fit pulleys well, we increased the distance between two pulleys to tie the belt. Another problem is there is too much friction between the wheels and cart's axis so we added Aluminum tape and lubricant oil to decrease the friction. So far, the two transmission wheels' friction of "Backward" motion still has huge difference, we will try to fix this problem.

Hardware

For the hardware system, we already built two motor drivers for our DC power motors; we installed the Arduino UNO microcontroller, Kinect sensor and *"Infinity"* batteries. We implemented the code for reading the data from Kinect sensor and Android App. We also designed the step control code for four directions. We still need to figure out how to power the Kinect sensor by our DC battery. We also plan to add the distance sensor onto our product in order to increase the security level of our product.

Software

We designed the Kinect sensor's code for tracking a specific user and feed the position to Arduino UNO. We still need to test the stability of the tracking code in different environments. For Android code, we designed the user interface for switching between different modes, and remote mode control panel. We already finished most of the test for remote mode, but the "Stop" button does not work well. We are trying to find the solution to fix it.

Conclusion

FOYO Technologies Inc. has been strictly following the schedule which we provided in proposal document previously. We are currently on the stage of prototype modification and debugging in order to improve and upgrade the functions and safety of *Tesigo*. We are also expecting to complete this project before the scheduled demo date on December 8, 2015.