



Progress Report

For the Office Automated Delivery Robot

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Overview

Our Office Automated Delivery Robot (OADR) has a few days left until it finally sees light of day. So far we have achieved milestones such as completion of the QR code decoding, completion of the database, and completion of the chassis, and these events have made us proud and given us a sense of satisfaction. Below topics discuss what we have accomplished in terms of hardware, software, and other important attributes of the project.

Technical Development

The OADR

Hardware

As of November 29th, the OADR's chassis is fully built with T6 aluminum framework, motor, and drive wheels in place. The total weight of the chassis is around 25 lb, which falls into our design requirements. The rotating top compartment will be built within the next several days. The OADR will be clad in a white outer covering, which have not been built yet. The circuit components such as motor driver, voltage regulator, proximity sensor, and batteries have been verified and wired, and will be assembled within the next couple of days.

Software

We have been implementing most of the OADR's software requirements except the motor controller, which is still in progress. The motor controller program itself is ready; however we've discovered that we need a specific USB-to-UART converter, preferably in RS232 protocol, to link the motor controller program with the rest of the software bits. The USB-to-UART converter is in our hand. We have tested the instruction-feeding algorithm which takes the input via a website that is directly connected to the database of the OADR's order query. Based on the database inputs, we have successfully detected and decoded the QR code. Also, we computed a robot route with the QR code information and the database query. Successfully executing our path finding algorithm with a motor controlling program is the last piece to complete our software implementation.

Budget

Approximated cost of building the OADR is around \$700. Most of the parts that are purchased for the project have been carefully selected for their performance, cost and compatibility. The KAFEI have spent around \$900, due to international shipping fees, and additional components that were needed throughout the project. Since KAFEI has depleted all of the ESSS Funding, we are currently seeking for support from Wighton fund to cover rest of the fund.

Human Resources / Group Dynamics

KAEFI members have been working closely to achieve objectives of our project. There have been frequent phone conversations, email exchanges, webcam conversations, and Facebook group postings to compile latest status from each member. Formal weekly meetings were held to make sure the project is on the right track.

Action Items

The next item of the OADR is successfully installing all hardware components in place. Also, the remaining items are construction of storage section and improving the exterior aesthetics of the OADR. KAEFI members will do integration and prototype testing once the integration phase is completed. Final goal is to ensure that our prototype works flawlessly while meeting our functional specifications. The completed OADR will be a system that has passed in-depth testing that we've mentioned in design specifications document.