

4U App

New Mexico Supercomputing Challenge

Final Report

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Team number: 1012

Melrose High School and Middle School

Team Members

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Executive Summary:

Last year we made the 4U app and the proof of concept of how it would run. It was created to help special needs students navigate a school where they didn't know where to go. This year we have made improvements and increased the scope of the model. It now shows the rest of the school. We have the entire high school grounds, and we have made the routes more complex.

We created this project because of a student in our school who has special needs and didn't remember where to go for their different classes. We came up with the idea of having a handheld device showing a map of the area, it will show a person's present location and arrows on the screen to show where they need to go. This will help them to become more independent. We thought that this would help with students and people who need the extra help.

We want this program to be available for anyone who needs it. As we develop and improve the project we will make it available on Apple and Android hardware platforms. We would like this to be used also for parents or anyone who might be new to a school as well. This will also be used for incoming freshmen to a high school or college. Another application would be for workers or visitors at an unfamiliar location.

We created this project because we saw a need for it in our school. We know that this is not a one of a kind product, but we want to make this product more personalized than most other things are in technology. We hope that this would be used in other schools, not just ours or schools around us. This is a continuation of last years project to give it a more real-world look.

Problem Statement:

We are continuing our project from last year in which we made a program to help people with special needs or people in a new environment; navigate a space they are unfamiliar with. We had this idea because of a new student we had last year; who has special needs and had a hard time getting around our campus. Last year we made an interface and the waypoints and the basic components of our project. We think that this will help because it will be less stressful on the student and the teachers.

Method/ Computer Model:

This year with our model we have made it much more complex, it now represents our entire school campus. We have added the new gym complex, the Agricultural building, the entire high school building, and we built more on the cafeteria. This year we have three models running to make this code run. We have a map making program that needs to be run. A waypoint maker program that needs to be run. And the updated code from last year. The building mapper program takes an image and you can trace and label the rooms, and it will put that data into an Excel sheet. We have made many improvements to the code over the past year. We have a new code this year. The code last year ran off of hand input .csv files, this year one of the programs makes the .csv files and is harder to read in the NetLogo code.

Verification and Validation:

With this project our validation is the logical part of it. Our project is modeling if we make this happen here, how do we make it happen in the real world in an app. We can verify if it works here then it will most likely work in the outside world. If we can verify that then we will be able to make this an actual application. The way we would have to verify our project is when people can actually be using our app and that it works successfully. This right now is a sort of proof of concept, we can't run this only in NetLogo it will have to be in another coding language.

Conclusion and Results:

In conclusion, we think that we can prove that this can be a real working app. Our results are that we worked more with the code and developed it more. We hope that once we get the code perfected we can start to make the app for real, not just a model of the app.

Significant Achievements:

We created a more detailed high school building. We made the Agriculture building and new gym complex. We are going to be able to send people to a different place in the school, and with much more detail and make it look much more realistic than what we had it running last year.

Citations and Acknowledgments:

Reference websites

<https://proximi.io/accurate-indoor-positioning-bluetooth-beacons/>

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