CS 4590 Mini Project

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School Bus

The user of our interface will mainly be school bus drivers for students between grades one to nine. As a school bus driver, one has to pay attention to the students that are on the school bus and also drive the school bus to each student’s home to either fetch them or drop them off.

Most of the data will be from GPS sensors and motion sensors on the bus. When the bus is not moving and has someone getting on/off the bus, the motion sensor will detect that someone has gotten off or gotten on the bus and will start the siren. GPS sensors will also get the location of the stop signs and alert the bus driver when the bus gets close. The last motion sensor that detects motion of the students will be quite complex since it has to detect anyone that stands up before sounding the alert.

We have five different sounds – AlexHome, GetUpSiren, StopSiren, StopSignSiren, CounterSound. AlexHome sound is sounded when a student reaches home. It will have an alert and then call out the student’s name to remind him that he has to get off the bus, and also to notify the bus driver if the student has actually fell asleep. When anyone stands up throughout the journey, the GetUpSiren will sound and alert the bus driver that someone has stood up. This helps the bus driver as he no longer has to keep watching out for anyone that is doing anything dangerous. The StopSiren alert nearby cars that the bus has stopped and people are getting up and down the bus. Along with the visual notifications, cars around the bus are able to better realize that the school bus has stopped and they have to stop. StopSignSiren is used when the bus driver approaches a stop sign. Throughout the journey, the bus driver may have to take care of many other incidents that are occurring. For example, a parent may be calling to check if his or her child is on the bus when there is a delay in arrival time. Thus, the StopSiren can bring the driver’s attention back to the road and stop before it is too late. Lastly, the CounterSound changes in pitch and beep once whenever someone gets down or up the bus. When the pitch gets low, the bus driver will know that there may only be one or two students left on the bus. When the pitch gets high, it should be a pretty crowded bus.

The positive effects are obvious – The bus driver can now focus more on the road and use audio cues to learn what is happening behind him. He can also concentrate on driving while being signaled that he has to stop. The StopSiren also enables students to cross the road more safely when they are going to school or going back home.

We interviewed several external people who tried out our prototype. Some of the feedbacks include the StopSiren sound being too similar to the police’s siren. It may cause confusion when people are unfamiliar with it. The change of pitch for the counter also seems weird since there is no clear indication of the number of people on the bus.

**Two scenarios:**

1. Student A decides to stand up and talk to student B who is unreachable while sitting down. When he stands, the siren will sound and the bus driver will be alerted, slow down or stop before asking the student to get back to his seat.
2. The bus reaches the home of Student C and stops. The sound notification alerts that Student C should be getting off. However, after a few seconds of waiting, the bus driver realizes that there is no response. He then gets up and finds student C who has fallen asleep, wakes him up, and brings him down the bus.

Controls for prototype:

W A S D to move the camera.

Z to switch on the StopSiren.

X to switch off the StopSiren

3 to make three students stand up.

E to trigger someone getting up the bus (increase pitch)

R to trigger someone getting off the bus (decrease pitch)

Shen Yang:

* Sound triggers
* Sound creation
* Camera control

Bo Chen:

* Created scene
* Animation of students standing up