Attendance Taking Robot

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Since the beginning of the start of school, teachers from all around the world have to take attendance for each individual class. They can sometimes forget to take attendance, miss someone that attended class or just waste class time. Many of these dilemmas can be security issues which can lead to people being in danger, or since attendance is a legal document, this can help prevent teachers getting troubles.

- Teacher always have to take attendance for the class
- It is time consuming, taking up the beginning of class
- If student leaves the class, a teacher can see if the student is ditching the class
Background Research

Kelli Marshall, a high school English teacher, said that, “taking attendance always seemed more laborious than necessary, and in some cases, it wasted valuable class time”. It gives teachers less time to teach the students the material for the course. She said that she never thought to not take attendance since it is part of the job of the instructor. If teachers did not take attendance, students would not show up to class. Clearly, a more efficient way of taking attendance every day in class is needed. We are creating a robot to take attendance just by scanning the students school identification cards. When a student scans their ID, the robot will put into the system that the student is present.
Interview with Teacher

We interviewed a teacher and asked him about his opinion on a robot that takes attendance. He said that this robot would be extremely useful and helpful to teachers. Robots are much more efficient than humans, so the process of taking attendance would go much faster. He also expressed how taking attendance is very disruptive to both the teachers and students in the class.
Specify Requirements

- A micro controller that is called an Arduino that would connect to a rfid sensor
- Rfid sensor that would register each student and what time they attended the class
- Each student would use their id that would have a rfid card with sensor calibrated to their student id number

Hardware:
- Microcontroller - Arduino
- RFID Sensor
- RFID Cards
- LEDs
- Buzzer

Financial Requirements
- Arduino - $16.98
- Buzzer - $1.50
- RFID Sensor - $6.99
- LEDs - $4.98
- Wires - $1.95
Brainstorm, Evaluate, and Choose Solution

Our product is a robot which scans students’ IDs when they walk into class. This is a much more efficient way of taking attendance compared to teachers wasting class time to do it themselves. As the students come into the classroom, they just have to scan their IDs on the scanner of the robot, and it will automatically mark them present. If a student never scans their ID that day, they will be marked absent. If a student scans their ID after class has officially started, they will be marked tardy. Our robot will make life in the classroom easier for the teachers by taking attendance.
The project uses an RFID reader to read students’ IDs and transfer the information on their cards onto a desktop computer, where it lists the student’s name, grade, and the time they entered class with a notification saying if said student is either on time or tardy. Following the card being scanned, a light (green if on time and red if tardy) lights up and a sound will be played in order to let students know their card was properly scanned.
Testing Solution

- Some ways that the robot can mess up:
  - A student did not scan his ID correctly
  - A student walked in to class without scanning his ID
  - A student gave his friend his ID to scan on a day where he wasn't there
- Our robot will work very well if people don't try to mess with the system and scan their IDs when they are present
- We built our project and tested it with our own IDs and it worked!
- One way to possibly improve our robot in the future would be to add the feature of a face scanner
*This picture is a diagram of how we planned to create the product

*This picture is our project in action after we built it and it works
Bibliography

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