

Background info

Wheelchairs empower individuals with mobility impairments to move independently, but this newfound freedom can raise concerns about their safety and access to assistance. In this context, we explore the need for a system that bridges the gap of supervision, ensuring that those in wheelchairs can access help when required.

Introduce Trey

Trey, who is diagnosed with cerebral palsy, uses his electronic wheelchair everyday to get to where he needs to be without any external assistance. However, he does have some worries about getting help in case he is stuck and cannot pull out his phone.

Introduce our project

Our project aims to address this problem by installing sensors in his wheelchairs that will detect a crash or other emergency situations and automatically connect to his phone and call his emergency contact.

Extended piece:

Background:

Wheelchairs provide newfound mobility to individuals with limited physical abilities. However, this independence can give rise to concerns regarding safety and access to assistance. Within this context, we explore the pressing need for a comprehensive system that fills the gap of supervision, ensuring that wheelchair users have access to prompt help when required.

Meet Trey:

Allow us to introduce Trey Quinn, a resilient individual living with cerebral palsy. Trey relies on his electronic wheelchair for daily mobility, granting him the autonomy to navigate life independently. Despite his determination, there lingers a genuine concern—what if he encounters a situation where he cannot readily access his phone to seek assistance?

Our Project's Vision:

Our project is driven by a singular mission: to enhance Trey's and others' lives like him. We intend to tackle this challenge head-on by integrating advanced sensors into his wheelchair. These sensors will not only detect crashes or emergency situations but will also seamlessly connect to his mobile device, initiating a notification to his designated emergency contact.

Moreover, we aim to leverage efficient and reliable sensor-based, low-power smart technology to go beyond safety alone. We envision creating smart automations that optimize Trey's daily life, enhancing not just his safety but also his overall quality of life. In doing so, we aspire to provide not just a safety net but also newfound privacy, convenience, and an improved sense of independence for Trey and individuals sharing his journey.

Our mission is clear: to enhance the lives of individuals like Trey. We're integrating advanced sensors into his wheelchair, detecting crashes or emergency situations and instantly notifying his designated contact. Beyond safety, we're utilizing efficient, low-power smart tech to introduce smart automations that improve daily life. This means added privacy, convenience, and an elevated sense of independence for Trey and others on a similar journey.

BY this, the research question posed is:

This is the research question, we intend to solve:

How can we effectively integrate efficient and reliable sensor-based, low-power smart technology into wheelchair systems to enhance the safety and overall quality of life for individuals with mobility impairments?

This addition ensures that the improvement of quality of life is linked directly to the project's vision of integrating smart technology,

Two things to note:

Safety & QoL

BY incorporating these two aspects, we emphasize the holistic benefits the project aims to provide directly related to its vision alongside the usage of sensor based microcontroller technology.

Project Current Status:

And trust, we've already started;

We have met with our mentor to understand the objective mentioned earlier and a clear goal for our semester ahead. We are conceptualizing and do some pre-planning before we submerge right into the project, (sensors to use, microcontrollers to work with..., etc)

so that is being taken care of including time allocations and task delegations based on expertise.

Project Plan:

This is our current itinerary.

First off, we need to do some literature review and independent due diligence to solve the problem systematically!

We are definitely going to need some notification handling in concurrency to system implementation alongside sensors.

We will need take time to integrate these things and then do some design verification. Lastly, of course the docs.