

Reflective Journal on my Experience with the Gritbot Project

My experience with the teamwork in TreadSafe group.

My role within the group, TreadSafe was the hardware and software design lead. My role was to research into the hardware and software required to get the Gritbot to work, including its internal structure and how it would function. I created in-depth technical diagrams of the internals of the Gritbot as well as researched into outside companies offering parts that can be utilised and what materials would be used to construct the Gritbot.

I also worked closely with Mia for the design as our roles were often connected. For example, I mentioned that the robot's design needed wide fenders to fit the wider spread wheels, which Mia included in the design. However, I found that some issues I raised weren't always fully taken into consideration with the final design, such as a vent to allow airflow to the battery, and the location of the lidar scanner, and often aesthetics were considered before practicality. I believe this would've been resolved with better communication between me and Mia, possibly if we had dedicated sessions to discussing the design, rather than group sessions which were a mix of all things that needed to be discussed for the group.

Furthermore, there was a miscommunication in the group roles. Oliver, whose role was the modelling and prototyping lead, thought his role involved the hardware design and confused it with my role. This led to a lot of confusion at the beginning of the project; however, it was then corrected later through group meetings. This could've been avoided had meetings been recorded online for groupmates who were not present that missed important information, or for more communication to have been done with missing members of the group.

At the beginning of the project, the teamwork in our group, named TreadSafe, was often times disorganised due to many of the group members not being able to attend meetings and therefore missing crucial discussions and key info in the group meetings. This often led to difficulties with assigning tasks to team members who were not present and led to a lack of communication.

However, we did have a team discord server in which we would communicate, plan meetings, share each other's progress and join digital meetings through calls and do the work together. This became extremely useful later in the project and solved the issue of many group members not being able to attend in-person meetings. We also had a shared google doc where we would collect our research, references and work on so that other group members could see and we would all be kept in the loop of what we had all done for the project, however, I noticed that many group members were not checking the document and often times I was asked for things, such as the

materials list, when I had put this on the document for the groupmates to see, which often caused delays in the project as not everyone was keeping track of the document.

Teamwork Rating

I would personally rate the group teamwork a 3 out of 5. While we made use of many useful tools and software for teamwork and worked well together when creating presentations and scripts, not all the teammates fully utilised this and often there was a lack of communication and understanding between teammates due to not everyone being able to attend group meetings and people deciding to do their individual tasks towards the end of the project without discussing with the other group mates or including their research in the shared document.

Design Limitations and Risk Factors

The project of the group was to create a robot, similarly to a roomba or automatic lawn mower that would grit pavements and walkways in residential areas. This would solve the issue of many pavements and walkways not being gritted, leading to risk of accidents, and create more use for grit bins that are often neglected.

The main limitations of the project were the scope of it as well as the lack of experience and knowledge in robotics that the group had. Much of the group consisted of Games Design students, with one VFX/Animation student. We found it difficult to get students from other courses to join our group as everyone had decided to group up with friends, leading our group to be at a severe disadvantage as we were all designers and artists with no experience in robotics or programming.

As a result, my group was unable to create a functioning prototype, nor were we able to fully understand the scope of the project and things needing to be considered in it due to our lack of experience within the topic.

While designing the Gritbot, I encountered many risk factors that would be considered with the project. For example, while the purpose of the Gritbot is to make pavements safer, it would also become an obstruction to people who are visually impaired or wheelchair users that may not have the room to go around the Gritbot.

As a solution, it was decided the Gritbot would make a noise to alert people and animals of its location to prevent the risk of people tripping over it and to deter animals from interfering with the robot. Furthermore, the Gritbot's size was considered, ensuring it would allow room on the average UK pavement width for people to bypass it. Additionally, it was decided the Gritbot would include lidar detection to avoid collisions with people, animals and objects.

