## 1 Tables of Idea Generation

| Subsystems | Benefits | Drawbacks |
| --- | --- | --- |
| Motion system (Wheel / motor system) | It allows the robot to move and go to different places, and navigation. | It's harder to capture on video. |
| Lights system | A different way for the robot to communicate, for example in morse code and navigation. | Hard to program and keep in sync, if making a complex system. |
| Audio system | Can make sounds (for example, alert of collision). | Very elementary noises, harder to detect in the video, lower quality sounds. |
| Audio detection system | Can detect noise (like clapping or voices). | May not always be able to detect (faulty). |
| Visual detection system | Detecting people and different objects, following lines. | Glare makes it not work well. |
| Shooting system | Able to throw and hurl items, move items from A to B. | Promotes violence. |
| Collision detection system | Able to detect walls and objects. | Will need to run into the wall to detect it. |
| Power & Battery System | Rechargeable. | Only lasts 2 hours. |

*Table 1: Subsystems and their benefits and drawbacks.*

| Idea | Notes | Subsystems Used | Idea Compared to Design Criteria | Creator of Idea |
| --- | --- | --- | --- | --- |
| Food delivery | Deliver Food across campus (indoor buildings), So you can stay seated while you wait for your food | * Motion system * Power & Battery System * Collision detection system * Visual detection system | * Fits all | Liam |
| Running Partner | Have a light to guide your run. Run alongside and keep track of distance. | * Motion system * Power & Battery System * Lights system * Visual detection system * Collision Detection System | * Fits all, but needs a light modification (to light up larger area) | Cassidie |
| Support for the elderly | Help with groceries  Walking partner  Emotional support  Keep track of medicine | * Motion system * Power & Battery System * Visual detection system | * Fits all, needs to be cautious about working temperatures | Emilia |
| Musical & Dancing | Plays music  Dances  Shows for kids  For parties | * Motion system * Power & Battery System * Lights system * Audio system * Visual detection system * Shooting system (confetti) | * Fits all, but would need to be designed carefully to ensure it sync with music that is being played. | Farooq |
| Gardener | Indoor plants watering. Fertilizing | * Motion system * Power & Battery System * Visual detection system | - Fits all, but Uncreative( given as an example many times). | Krystian |
| Artist | Draw/paint Pictures | * Motion system * Power & Battery System * Visual detection system | * Fits all, but would require possibly modifying the robot. | Group |

*Table 2: Ideas generated of concepts for our visual representation.*

## 2 Selection of Ideas

*Food delivery*

We chose food delivery as our first option, because it fits all design criteria and was globally voted by all team members. Showing that the robot helps humans with a basic necessity, food, associates the robot with life, rather than the war robot side. Students could order food and the robomaster would deliver it to their table from food courts on campus.

*Dancing*

We chose the robot acting as a median for dancing and music - because it fits all design criteria with the exception of it being technically difficult to program - which is something that can be managed based on good planning. Moreover, we thought showing the robot dancing was a good way to meet the needs of humanization, and showing it working with humans.

*Elderly*

Helping the elderly fits all the criteria. For example, the robot could play a sound every time an elderly person needs to take pills or if it is time to exercise. It could also help them cross the street, carry their groceries, and act as an emotional support. In a time where the elderly population in Canada is growing and elderly people are lonely, this kind of support would provide much needed benefits to these people.

## 3 Voting of Members

*Voting (top 3 choices for each team member):*

Farooq – Dancing, Elderly, Pizza

Liam – Pizza, Dancing, Art

Cassidie – Pizza, Running, Dancing

Emilia – Elderly, Pizza, Dancing

Krystian – Gardener, Pizza, Elderly

## 4 Appendix

Other ideas from our group are mentioned and thought out at the preliminary stage in *Table 2*.