Musts:

1. The ability to move around the campus autonomously
2. Ensures the safety of the packages (re-state)
3. includes a storage unit for the shipments.
4. tamper proof electronic components
5. Made from durable material
6. operate within the speed limits of the medium (road, air, etc…)

Wants:

1. neat design
2. does not procure harmful gas emissions.
3. Can carry weight within (10kg-20kg).
4. Can charge using charging stations.
5. Costs less than 2500 SAR

Constraints:

1. The cost of the project must not exceed 5000 SAR
2. Project must be completed before the end of Term-2
3. Causes no harm to the surroundings.
4. battery life lasts for at least one complete trip.
5. Guarantees the privacy of the packages

Extra)

* The project should weigh less than x kg

Assumptions:

1. the university network covers the whole campus or at least a 4G connection is available.
2. no lock-down or any action that can limit our visits to the targeted campus.
3. no temporary or constructional change on the campus map.
4. It is allowed to operate prototypes within the campus roads & facilities.

Extra)

Safety of the prototype during on-campus operation.

Objectives:

LL:

1. Connect the whole university buildings into a single automated delivery network.
2. Improve productivity of employees/students by saving their time.
3. improve the movement of the economy inside the campus, by providing the infrastructure for an automated delivery option.

HL:

1. push to tech field industry in Saudi Arabia (restate).
2. Raise awareness to decrease the carbon emission, by providing an electrical alternative to gasoline-based vehicles.
3. Encourage upcoming generations to research & develop autonomous solutions.

Risks/remedies

|  |  |
| --- | --- |
| Risks | Remedies/mitigations |
| weak wide fidelity signal | use 4g |
| A part breaks down | Replace with higher quality part. |
| shipping delay/dead on arrivAL | Order them early/Find local alternative. |
| a team member quits | find another, otherwise just keep going with two |
| term concludes sooner than scheduled | work for extra hours, fulfill the musts in worst case scenario. |
|  |  |
|  |  |

Milestones:

1. Generate different alternatives
2. Evaluate each alternative and choose the best alternative.
3. buy the components
4. start working on technical design document
5. Finish the term-1 report
6. term-1 Presentation
7. implement the algorithms
8. Testing & troubleshooting
9. finish the artifact
10. finish the term-2 report

Specifications

1. Battery life can last at least 500m trip while carrying 0.5kg package.
2. Size of package at least x cm3.
3. Can carry packages of weights up to x kg.
4. Operates at average speed of x km/h

PS:

To reduce the need for manual transport of food, equipment and documents. A robotic autonomous device should be developed. This way, workers/students can stay at their respective stations/classes rather than having to walk back and forth across the campus.

KAU employees struggle with delivering important documents between different entities

Create a unified and comprehensive delivery network across the KAU campus without human involvement.

Responsibility & roles:

Muhannad : navigating algorithms

Sulaiman : Obstacle avoidance algorithms

Wael : hardware & code deployment

Roles

* Wael Idea challenger, Recorder
* Muhannad Organizer, Gatekeeper
* Suliman Team leader/ Project manger
* Plays the role of the devil’s advocate, types the meeting minutes. **( I do not do this yet)**
* Organizes team meetings time and place and the meeting outcomes, ensures that all goals are achieved.
* Planning and organizing the completion of tasks within the project