Seamless Engineering Milestone 1 - Requirements Template

Team number: Seamless Engineering Group 06

# Requirements

If there is one aspect a project must have in order not to be doomed to failure, it is a reasonable and comprehensive repository of both functional and non-functional requirements. A project's requirements must be well considered, balanced and easily understood by all team-members, but perhaps most importantly, they must not be dropped or compromised during half of the project.

Fill out the following templates according to your requirements.

Functional Requirements

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ID | Title | Description | Priority | Remarks |
| **F1** | **Throughput** | **The throughput of the system is xx** | MUST |  |
| **F2** | **Reliability** | **Objects must not be lost or damaged**  **(NOTE: WE ONLY NEED TO DELIVER ONE OBJECT AT A TIME, NOT MANDATORY TO MOVE ALL OBJECTS ALTOGETHER)** | MUST | **Objects A and B should only go in their respective slots.**  **The objects should not be stacked up on one another.**  **We should not drop the object.**  **There should be a clear indication of the current state of the system, so turtlebot knows (for eg.) if the object is being loaded or transported, etc. So it should be event driven and not time-driven** |
| **F3** | **Customer Satisfaction** | **The system must deliver the requested objects correctly** | MUST | **Objects of size ‘A’ and ‘B’ should be correctly identified wrt their colour and shape.**  **It is to be ensured that the colour of the objects are in a predefined order** |
| **F4** | **Emergency Stop** | **The system must stop all processed in case the emergency stop button is passed** | SHOULD |  |

Non-Functional Requirements

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ID | Title | Description | Priority | Remarks |
| **NF1** | **Easy usability of the system** | **The system must be intuitively usable** | COULD | **We provide a friendly user interface** |
| **NF2** | **Portability of the system** | **The system should be portable to the same hardware components without effort** | SHOULD | **We are using ROS as a coding platform, so the system will be easily portable** |
| **NF3** | **Central settings area** | **All important settings should be centrally visible and adjustable** | MUST |  |
| **NF4** | **Robustness against external interferences** | **External interference in the system (human intervention, etc) should not lead to a failure of the system** | COULD | **If we detect anything unexpected in the camera view, we pause the system where it is, and we may resume when the normal condition is back** |
| **NF5** | **Optimized routes** | **The system should be resource efficient in terms of time and energy** | SHOULD | **The system will approximate the shortest path between the loading area and the conveyor**  **Robot will follow a predefined good orientation so that the pick-up and dropping of the object gets easier** |
| **NF6** | **Efficient use of sensors and actuators** | **The total cost of logistics hardware must be as low as possible** | MUST |  |
| **NF7** | **Scalability** | **The system must be expandable in terms of hardware and software** | COULD |  |
| **NF8** | **Reusability** | **The system should be well and comprehensibly documented** | SHOULD | **We will provide the system documentation** |