

Project Requirements Specification

Project Objective

The objective of the course project is to experience the aspects of the systems engineering process. Small teams will choose and define the scope of their project within the context of a robotic system. Teams pick their concept, its requirements and the criteria by which it will be evaluated. The greatest challenge is in appropriately scoping the problem and defining these criteria, to get the best system.

Requirements Analysis and Specification

The purpose of the requirements specification is to first capture and then analyze what the robot is supposed to do. The goal is to elicit a comprehensive specification for the system. Each assumption, requirement and constraint needs to be identified and described.

Requirements analysis refines and structures the list of wants and needs. Clear statements, organization by relationship, and prioritization are all beneficial. Consistent patterns of organization and description improve clarity and a method of tracking each assumption, requirement, and constraint will aid design and further development.

Requirements analysis is not design and should be focused on "what" not "how". Traditional specifications (meaning lots of prose) are a start. Structured analysis methods will help describe what the system does systematically, often graphically. A requirements specification will typically contain prose description of the system, indexed requirements, and various models of the system to capture its function and form. Use Cases and Sequence Diagrams are appropriate with various scenarios described and referenced to requirements.

With any requirements specification ask the question, "Could this document be handed over to a completely independent team to design and implement a working system?"

- Develop a requirements specification for your robot
- Clearly identify (and track) functional and nonfunctional requirements
- Create models to describe function
- Represent and describe how the robot performs its functions, its concept of operation
- Apply sound engineering practice, clearly stating assumptions, using version control and cross referencing.

Length is not limited but 10 pages of text (without figures) is a reasonable guideline. Specifications should be concise yet complete.

Each of the project documents may be revised and resubmitted. This is particularly encouraged if new information or change of approach requires alteration of previous work. The revised document will be re-evaluated with increasing expectations.

The document must be submitted to the digital drop box as a PDF file. The file must be named in the following pattern: <teamname/acronym>_spec_v<#>.pdf