

# Verification 1 – Mechanical

The mechanical verification will evaluate the quality of your CAD model. For your design verification, you need to CAD a relatively complete model of your entire robot. Come prepared to lab ready to give a brief, but complete, presentation of your CAD model that addresses each of the following aspects of your design, and follows the guidelines below.

Verification 1 will take place during lab 3 in week 5. Please read the checklist carefully, and be 100% prepared to describe the simulation results and pseudocode.

## Feasibility (2 points)

- a) All parts can be acquired or constructed. Don't forget your access to 3D printing (good practice).
- b) Check that all components have accurate dimensions (good practice).
- c) All components are connected to the robot. You can use simplified geometry for the electromechanical components (1 point).
- d) It is easy to distinguish moving parts for propulsion and steering. Either use mates to demonstrate movement, or otherwise ensure that functional steering/propulsion is clearly possible (1 point).

## Completeness (2 points)

- a) The model includes all components (1 point):
  - Microcontroller
  - Servomotor
  - Air cylinder
  - Solenoid air valve
  - Air tank (i.e. large rubber tire)

- Pneumatic (air) tubing (any approximation that shows an adequate path is enough)
  - Battery
  - Rollerblade wheels
- \*\* complex components (e.g. Arduino) can be properly-dimensioned and labeled\*\***
- b) The air tank is at the correct height, and parallel to the ground (1 point). No component extends beyond the 12" diameter of the robot (per competition rules).

## Presentation (1 point)

Format your presentation (3-4 minutes in length) as a slideshow with sufficient and clear images, or a well-rehearsed demonstration in Solidworks or other CAD software.