Brigham Young University

AUVSI Capstone Team (Team 45)

UGV Requirements Matrix

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GV-04	1.0	10-30-2018	Wrote concept description	Jacob Willis	CHECKED BY

Introduction

This document describes the purpose of the Unmanned Ground Vehicle concept selection.

Description

In the 2019 AUVSI SUAS competion, points are awarded for successfully delivering an "unmanned ground vehicle" (UGV) to a target location; additional points are awarded if the vehicle drives to another target location. The UGV must be capable of carrying an 8oz water bottle, and the impact must subjectively be "soft." During the delivery the airframe cannot drop below 100ft ASL, so a system or mechanism for landing the UGV without damage is required. Because this payload drop problem is the most challenging part of the UGV design, determining how to accomplish the payload drop is the subject of this concept development. The UGV is assumed to be a "black box" capable of driving to its target once it is on the ground.

Figure 1: A simple prototype of our parachute seen from the side.

Figure 2: A simple prototype of our parachute seen from the top. Note the hole in the middle of the parachute. As mentioned above, we found that this greatly improved the accuracy of the parachute.

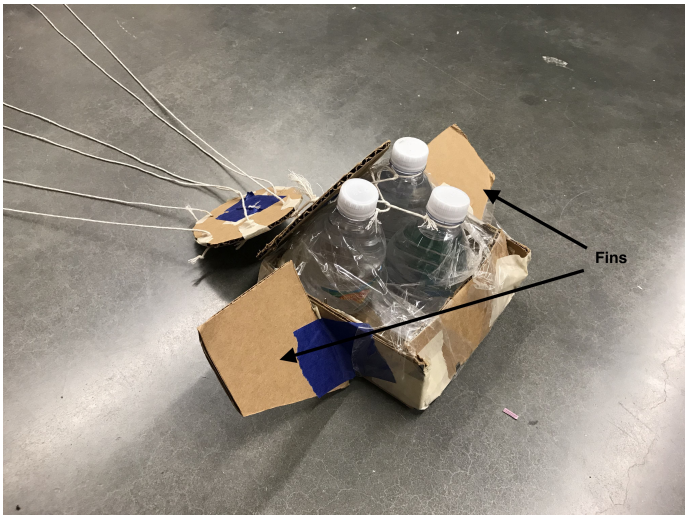

Figure 3: The payload we used to simulate the UGV. Note the fins. As mentioned above, preliminary results seem to indicate that these fins provided a small amount of control authority over the parachute's trajectory. This will help us improve accuracy