BYU AUVSI

Brigham Young University
AUVSI Capstone Team (Team 45)

Autopilot and Path Planner
Requirements Matrix

ID	Rev.	Date	Description	Author	Checked By
CT-005	0.1	02-28-2019	Initial requirements	Brady Moon	John Akagi
CT-005	1.0	02-28-2019	Requirements matrix added	John Akagi	Andrew Torgesen
CT-005	1.1	04-05-2019	Market Response Added	John Akagi	Andrew Torgesen

Introduction

This artifact describes the requirements matrix for the autopilot subsystem (See Figure 1). The measured values are taken from the five simulated tests and one hardware test which are described in CT-003, Path Planner Testing Procedures and Results. The market response is based on the competition rules where "Impressive" indicates more than 90% of the points would be obtained, "Good" indicates that more than 80% of the points would be obtained, "Fair" indicates that more than 70% of the points would be obtained, and "Poor" indicates that less than 70% of the points would be obtained. Values which are important to the efficiency or efficacy of the system but are not directly evaluated during the competition are marked with "N/A".

Product: UAV Autopilot

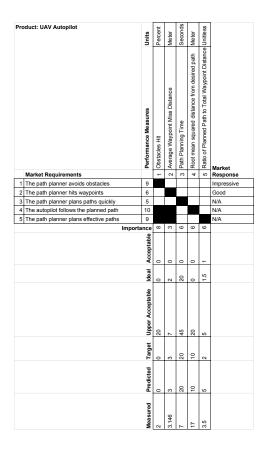| Performance Measures		Obstacles Hit	Average Waypoint Miss Distance	Path Planning Time	Root mean squared distance from desired path	Ratio of Planned Path to Total Waypoint Distance	
Units		Percent	Meter	Seconds	Meter	Unitless	
Market Requirements		1	2	3	4	5	Market Response
1 The path planner avoids obstacles	9	■					Impressive
2 The path planner hits waypoints	6		■				Good
3 The path planner plans paths quickly	5			■			N/A
4 The autopilot follows the planned path	10	■			■		N/A
5 The path planner plans effective paths	9					■	N/A
Importance		8	3	6	6	6	
Acceptable		0	0	0	0	1	
Ideal		0	2	20	0	1.5	
Upper Acceptable		20	7	45	20	5	
Target		0	3	20	10	2	
Predicted		0	3	20	10	5	
Measured		2	3.146	7	17	3.5	

Figure 1: Requirements matrix for the subsystem which will control the UAV.