**111017:** First Presentation, GNATT Chart, Software Layout/Construction plan including Failure Detection

**161017:** First Report, Solution Neutral Problem Statement, Requirements list, Electrical Systems and relationship to software, major components of Software, output from any software packages. Results from Discussion of the significance for the design and implementation of the robot system of the results of those initial experiments (See website for details) so far conducted.

Discussion of

– Overall software layout, inc sub-system/subroutine communication

– Timing issues

– Recovery strategies

– Initial BoM - see section L.4.3

**191017:** Design Acceptance

Your documentation should include:

1. the overall function of the software system (e.g. using flowcharts);

2. its structure in terms of the interaction of the component parts (e.g. datatypes, functions

and procedures);

3. its interface to the other subsystems (e.g. pin allocation on chips);

4. example datatypes and low level procedures (e.g. those developed during the initial

testing process).

5. \*†’BoM’, list of subroutines + associated size

6. \*† A list of three sub-systems operations, (one normally line following >0.75m), which will be demonstrated as part of the ’Basic Functionality Demonstration’, see section L.4.5.

**261017:** Basic Functionality Demonstration

**301017:** Final Presentation

Brief review of the overall design strategy

• Sub-team designs

• Problems encountered during implementation

• Changes to the original design and reasons for these

• Remaining problems \*

• Brief statement of likely performance in the competition.

**081117:** Final Report

Two Sensor Based, one to keep robot on the path of a line, one to detect when robot reaches a junction. Design Considerations:

* For a four-wheeled robot with one/two free front wheels and two back wheels (independent motors), sensors would be placed in the middle of back wheel axis, parallel to axis. Second sensor would be placed to the right of first sensor and aligned perpendicular to back wheel axis. This would be to detect when robot crosses/arrives at a junction.
* Any design with a motor to control rotation of a wheel would be an inefficient design as for pivot point of robot to still be center of rear wheel axis, two back wheels would still need independent motors.
* For case where robot will pick up and carry multiple balls, a two-wheel only robot is not feasible as necessary stability will be difficult to achieve without complex control systems programmed.

Key Program Requirements:

* For the case where multiple balls are picked up and stored, function needs to be programmed to memorize order in which balls are to be delivered and function needs to exist to determine shortest path between pick-up point and delivery nodes.
* Robot Motion Functions: Right Turn, Left Turn, Start, Stop, Travel at Constant Speed (Slow enough to minimize error due to delay in signal processing and inertia, especially if carrying extra weight of golf balls.), pop golf balls off stack, pick-up golf ball, determine type
* Objects: Operating board to be pre-loaded into memory (node map, linked list, NSEW pointers)
* Function to determine shortest path.

Failure Control:

* Types of failure: Missed junction, constant ‘check path correct’, robot strays off white tape, drop ball, cannot detect type of ball