Development and Communication

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ARCHIT ENTERPRISES

Specification Techniques for Communications Protocol

- Not in SCR format and no API included yet
- Communications draft defines each action and the encryption it would contain.

Example:

Move Straight

Command Type: MS

Parameters: Forward/Backwards, and distance.

Byte 2 is forward or backwards (F/B)

Bytes 3-9 is distance (#), can be null (0s)

Description: This command moves the robot in a straight line. The forward/backward parameter control the direction the robot will move in. The distance allows for the robot to move a specified distance, this parameter can be null. If distance is null, the robot will continually move

Example Commands:

MSF0000000 will move the robot forward continuously.

MSB0001000 will move the robot backwards 1000 units.

Communication Protocol Details

- Protocol defines each action that would be sent to/from the control station from/to the robot.
- Each command is made up of 10 characters
  - First two characters are the command type
    i.e. 'MS' for 'Move straight'
  - Following 8 characters represent parameters
    i.e. Byte 2 would represent forward or backward (F/B), Bytes 3-9 represent distance (#)

Development Tool Functionality

- Receives a command from the control software and compares to a predetermined table that contains all possible commands
- Returns success message if the command matches one in the table
- Returns error if the inputted command does not match a value in the table
    - Also returns an error for time out issues
- Test software can also send telemetry information (i.e. sensor data) to the control station

Development Tool Design

- The testing tool is the robot object.
    called Robot
- It will have a function that receives the command and returns a success or error message
    - Method does comparison of input to table of commands, which are previously specified in the Communications Protocol.
    - Returns (boolean) true if command is found, (boolean) false if not found/malformed.
- It will have a function that returns telemetry data to the control station
    - Generates appropriate telemetry information that will be formatted into the corrected command format and be returned to the control software

Development Tool Implementation Status

- Currently checks for valid commands.
- Is able to receive the command and return success (true) if the command is in the 'Move Straight' format, returns error (false) if the input does not match a command in the table
- 'Move Straight' command can be forward or backward (F/B for Byte 2) and a range of 10 (0 - 10 for Bytes 3-9)
- "MSF0000001"

Demo