TRKR-ERT

CodDoc

Summary

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1. Concept

The goal of this code is to provide data needed to track a moving target from a base that could be in movement. The output data is an azimuth and elevation angle, giving a pointing direction for the tracking mechanism.

The base position data is provided with a GPS Ublox SAM-M8Q module connected to the board using GPS_PORT with a serial communication at SERIAL_BAUD

The target position is currently provided via the COM_PORT with a serial communication at COM_BAUD. The data input format is :

"latitude,longitude,altitude\n"

For example : "45.555,6.123,293.23\n"

The data should be outputted with the following format

"AZ:azimuth, EL:elevation\n"

For example : "AZ:54.32, EL:6.03\n"

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2. Base Functions

The functions parse_target() and parse_base() are collecting the data from GPS_PORT and COM_PORT, as data could arrive at any point, they should be run continuously. Each of these two functions will return true if new data has been received.

The target variables are updated with set_target() and both base and target variables are available via get_target() and get_base()

The function azimuth(position1, position2) returns the azimuth angle (in deg) from position1 to position2 and distance(position1, position2) the distance in meters from position1 to position2

3. General Implementation

The code is continuously checking for a new target or new base position, if any of the two is updated, a new command will be computed from the two positions.

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4. DEBUG Mode

The DEBUG mode is designed to test the code when no GPS is available (indoor, or without a GPS module available)

In that case, the position used for the base is 0,0,0 (latitude, longitude, altitude(m)). It can be changed in get_base()

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5. Future Development

Implement the communication with the main GS computer
