# Robot documentation

## Global logic

1. Get target
2. Create particles
3. Loop Localization till x% probability reached
4. Compute global path
   1. Compute next step
   2. Move next step (robot & particles
   3. Adjust localization
      1. If probability < y% go to 2
   4. Check target reached
      1. Yes go to 1
      2. No go to 4.a

## Path management

Use cartography taking into account weight as defined in localization documentation

A A-star search algorithm finds the best path with combined objective to reduce motion cost (minimize distance and rotations) and cartography weight to reduce risk to get in obstacles.

## HMI

Notes

Interface java octave

javaaddpath('C:\Users\jean\Documents\Donnees\eclipse\RobotServer\bin')

javaaddpath('C:\Program Files (x86)\MySQL\MySQL Connector J\src\com\mysql\jdbc') ??

javaaddpath('C:\tmp\robot.jar')

javaclasspath

robot=javaObject("RobotMainServer")

ret= robot.GetLastScanID()

echo = javaObject("EchoRobot")

ret=java\_get(echo,"pendingEcho")

java\_set(echo,"pendingEcho",3)

javamethods(robot)

robot.GetCurrentPosition("1")

### Folders

#### Octave folders

Cd C:\Users\jean\Documents\Donnees\octave\echoLocalization

setupPath.m set the paths

C:\Users\jean\Documents\Donnees\octave\echoLocalization

Contains cartography files and…

Src : contains the octave source codes

@robotJava: define the java object

ToAnalyse: contains file to analyse

Training: contains file and matrix for the training phase

## Object command list

robot=robotJava create the octave / java object

|  |  |  |  |
| --- | --- | --- | --- |
| **Method** | **Parameter** | **Events**  (associated, to be checked) | **Action** |
| LaunchBatch() | NA | NA | Launch java server main program |
| SetTraceFileOn(n) | Boolean true false | NA | Set on of trace to file |
| StartTimeoutManagement() | NA | NA | Activate event and timeout management |
| NorthAlign(n) | n is the expected north heading | (6,6) | North align robot |
| UpdateHardRobotLocation() | NA | (8,8) | Set robot coordinates inside the Arduino |
| GetNorthOrientation() | NA | (1,1) | Request current orientation from Arduino |
| Move(alpha,delta) | Alpha: rotation to do in degrees  Delta: distances in mm | (4,4) |  |
| Scan360() | NA | (2,2) |  |
| GetRetcode(a,b,c) | a event number  b source  c destination  - 0 java, 1 octave, 2 arduino | NA | Get asynchronous return code of methods |
| GetScanAngle(n) |  |  |  |
| GetScanDistFront(int idx) |  |  |  |
| GetScanDistBack(int idx) |  |  |  |
| GoTo(long gotoX,long gotoY) |  | (4,4) |  |
| GetRunningStatus() |  |  |  |
| GetPosX() |  |  |  |
| GetPosY() |  |  |  |
| GetPosAngle() |  |  |  |
| GetHardPosX() |  |  |  |
| GetHardPosY() |  |  |  |
| GetHardAngle() |  |  |  |
| GetCurrentLocProb() |  |  |  |
| SetRunningStatus(int value) |  |  |  |
| SetPosX(int value) |  |  |  |
| SetPosY(int value) |  |  |  |
| SetAlpha(int value) |  |  |  |
| SetDebugCnxOn (boolean value) |  |  |  |
| GetHardJustReboot () |  |  |  |
| GetOctaveRequestPending () |  |  |  |
| SetCurrentLocProb (int value) |  |  |  |
| StopRobotServer() |  |  |  |
|  |  |  |  |
|  |  |  |  |