UML_ARL_Path_Planner_v1

Midterm Group 1 | October 11, 2019

Environment

+ obstacles: vector<Obstacle>

0..*

Obstacle

- centroid: Point
- radius: double

+ Obstacle(Point, double)
+ getCentroid() : Point
+ getRadius() : double

Point

- x : double
- y : double
- z : double

+ Point()
+ Point(double, double, double)
+ getX() : double
+ getY() : double
+ getZ() : double

PathPlanner

- resolution: double

+ findStraightPath(startPoint, endPoint): vector<Point>

RobotPath

- robotPositions: vector<RobotPosition>

+ RobotPath()
+ getPositions(): vector<RobotPosition>
+ collisionChecker(): bool

Robot

- numberLinks : int
- linkLengths: vector<double>
- initialEEPosition: Point
- currentPosition: RobotPosition
- goalPosition: RobotPosition
+ path: vector<RobotPath>

+ Robot()
+ Robot(initialEEPosition): Robot
+ computeFK(jointAngles): vector<Point>
+ computeIK(jointPosition): vector<vector<RobotPosition>>
+ getInitialPos() : Point
+ getCurrentPos() : RobotPosition
+ geGoalPos() : RobotPosition

RobotPosition

+ jointPosition: vector<Points>
+ jointAngles: vector<double>

+ checkCollision(Environment): bool