UML Class Diagram - Informed RRT*

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RRTNode

+ state: vector<double>
+ parent: shared_ptr<RRTNode>
+ costToCome: double

+ setState(const double,const double): void
+ setParent(const shared_ptr<RRTNode>): void
+ getState(): vector<double>
+ getParent(): const shared_ptr<RRTNode>
+ setcostToCome(const double): void
+ getcostToCome(): double

RRT

- RRTree: vector<RRTNode>
+ startNode_: vector<double>
+ goalNode_: vector<double>
+ Map_: Map
- maxIterations_: const size_t
- driveParameter_: const double
- plannerPath_: vector<pair<double,double>>

+ getPlannerParameters(): pair<size_t, double>
+ setMap(vector<pair<double,double>>, vector<double>): void
+ setStartAndGoal(vector<double>, vector<double>): virtual void
+ generateRandomNode(): vector<double>
+ getEuclideanDistance(const vector<double>,
                          const vector<double>): double
+ findClosestTreeNode(const vector<double>):
                          shared_ptr<RRTNode>
+ generateNewNode(vector<double>, shared_ptr<RRTNode>):
                          vector<double>
+ appendRRTree(vector<double>, shared_ptr<RRTNode>):
                          virtual void
+ isGoalReached(const vector<double>): bool
+ getPlannerPath(): virtual vector<pair<double,double>>
+ getRRTree(): virtual vector<RRTNode>
+ runPlanner(): virtual void
+ resetPlanner(): virtual void

Map

+ obstacleList: vector<vector<double>>
+ workspaceBoundary: std::vector<std::pair<double, double>>
+ boundaryXlimits: vector<double>
+ boundaryYlimits: vector<double>

+ setWorkspaceBoundary(const vector<pair<double, double>>): virtual void
+ addObstacle(const vector<double>): virtual void
+ onSegment(const pair<double, double>, const pair<double, double>,
                const pair<double, double>): virtual bool
+ getOrientation(const pair<double, double>, const pair<double, double>,
                const pair<double, double>): virtual int
+ isIntersect(const pair<double, double>,
                const pair<double, double>,
                const pair<double, double>,
                const pair<double, double>): virtual bool
+ isOutofMap(const pair<double, double>): virtual bool
+ isValidNode(const pair<double, double>,
                const pair<double, double>): virtual bool
+ resetMap(): virtual void