

# Project 5: Proposal

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# **1. Introduction**

Already what is there status quo problems What problems our approach will solve definitions background Literature Review (50-100)

## **2. Goal**

The paper "Anytime Motion Planning using the RRT" will be implemented in a simulation environment. Given an Environment with a static obstacle space, an Initial Configuration and a goal region, RRT and RRT\* is implemented for initial planning and extensions of RRT\* will be implemented during the control process for anytime applications. A simulation of a Turtlebot is operated in the environment of 2D space. The time complexity/runtime of all methods for anytime application will be analysed.

### 3. Method

Option 1 ( paper implementation from the literature ) in Simulation

Path Planning Method : Anytime RRT\* (an extension of RRT\* based on literature review)

Title of Paper: Anytime Motion Planning using the RRT Sertac Karaman et al.

- ROS and Gazebo
- Robot: Turtlebot
- Python

Hardware: None

## 4. Time Table

Subtasks and Proposed Deadlines:

- Environment Setup - 12th April
  - Map creation. sample goal and start region, sensor and actuator control in proper format,( operate the robot with commands/code)
- Paper Rough Draft (Method section) - 17th April
- RRT and RRT\* implementation - 19th April
- Paper Rough Draft (Results section) - 24th April
- Extensions of RRT\* Implementation (Committed Trajectory and Branch-and-Bound) - 26th April
- Implementation of RRT\* on Turtlebot - 26th April
- Testing/Implementation of anytime RRT\* on Turtlebot (Observing Time Characteristics for each procedure) - 3rd May
- Report and Presentation Making - 6th May
- Final Submission - 7th May

## 5. References

- Anytime Motion Planning using the RRT