Advanced Robotics (06-25021)
## *Assignment 3: Motion Planning*

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Assignment type: Individual

Exercise 1. *In this exercise, you are expected to implement a sampling-based motion planner. You have an option of choosing between Rapidly-exploring Random Trees (RRT) and Sampling-Based Roadmaps. You do not need to implement both methods.*

- **Programming languages:** *you can choose a programming language among the following options: c, c++, java, c♯, Matlab, and Python.*

- **Robot model:** *You can choose a holonomic or non-holonomic robot. For example, a disc shape robot is acceptable.*

Program input/output: *Three maps, all in the png format, are given. In these maps, obstacle regions are in black. Your program must accept a map, a robot model, and start and end pose as inputs, and the output should be a feasible motion plan, i.e., a trajectory which does not collide with the obstacles in the environment. The motion plan must be plotted graphically (see the example below). The image below is only an example. You can choose other interfaces to present your result.*
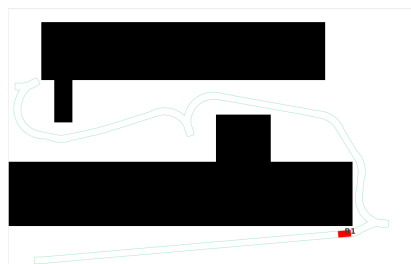
Evaluation criteria: *your program must be able to accept the attached maps or a map of similar format if required and be flexible with respect to the start and end poses. In the evaluation, I expect your planner to find a motion plan for my choice of start and end pose, and a map (e.g., among the attached ones) if such a plan exists. You will be assigned to a 10 minute slot to present your code as well as the results. The presentations will be arranged once the source code and the report are submitted by the deadline to Canvas.* (**10 points**).