

ECE183DA (Winter 2022)

Design of Robotic Systems I

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Problem set 5 | Graph search based motion planning

Key takeaways

After this lecture, you should understand:

- How the dynamic programming technique used in value iteration on discrete space problems can be adapted for some continuous space problems;
- What constraints on the continuous space system are necessary to do so, giving the linear quadratic regulator (LQR); and
- When and how to use the closed form LQR solution.

Assignment

- 5(a). In two to three English sentences, describe what modifications you would need to make to the LQR formulation in order to have a given system follow a prescribed trajectory $x_d(t)$ (as opposed to specifically driving the system's state to $x = 0$).
- 5(b). Would you be willing to let us use your correct responses as (anonymized) examples for the class?