

Robot Mobility

Exam Questions

All questions, except number 5, below relate to **both** the continuous-time case and the discrete-time case. You are of course welcome to focus mainly on one of the cases during the exam.

The oral exam will consist of two parts: In the first part you will draw one of the eight questions below and then discuss/explain it. In the second part we will discuss other parts of the curriculum.

1. Explain the concepts of reachability/controllability. Use a simple example to illustrate this concept.
2. Explain the concepts of stabilizability. Use a simple example to illustrate this concept.
3. Explain how to do reference tracking.
4. Explain the linear quadratic regulator (LQR).
5. Explain how to introduce constraints into a control problem (MPC).
6. Explain the concepts of observability. Use a simple example to illustrate this concept.
7. Explain the concept of an observer and detectable.
8. Explain how to do stabilization by dynamic measurement feedback.