Assignment no. 1

due: March 19th, 2018

The letter **(p)** after the exercise number indicates that this exercise has a programming component.

Exercise 1.1 (p) Write a program that solves Oskar's cube. The matrices that describe the faces of the cube will appear soon in the course's website, together with specifications how to output a solution path from start to goal such that the output of your program can then be run by the graphical program at the site—this way you can verify the correctness of your solution.

Exercise 1.2 We are given a convex polygonal robot P with m vertices that is free to translate inside a convex polygonal room Q with n vertices. The only obstacles to the motion of P are Q's walls. What is the maximum combinatorial complexity of the free space in this case? Describe an efficient algorithm to compute it.

Exercise 1.3 (optional) Implement a solution of Exercise 1.2.