Algorithmic Robotics
COMP/ELEC/MECH 450 or COMP/ELEC/MECH 550
OMPL Hands-On

The documentation for OMPL can be found at http://ompl.kavrakilab.org.

In class on Thursday 9/21 there will be a small hands-on demonstration of OMPL, showing how to setup a planning problem for three simple environments. Your code from Project 2 is also required for this demonstration, read the `README.txt` file distributed with the code for more information.

Two complete examples are provided to you in the code handout: **a)** planning for a point in $\mathbb{R}^2$ and **b)** a square in $\mathcal{SE}(2)$. These both utilize your collision checker implemented for Project 2. Additionally, there is a template for a "weird" robot that you should implement a few things for:

- The validity checker `isValidStateWeird`, which will utilize your implementation of `isValidSquare` from Project 2.
- The `ompl::base::StateSpacePtr` that describes the configuration space for the "weird" robot.
- The start and goal states for the robot.

The "weird" robot is described as follows. The geometry of the robot within the workspace is a square with fixed side length, and is attached to a prismatic and revolute joint, connected at the bottom-left corner of the workspace. The location of the center of the square and the orientation of the square is determined by two values:

- d, the distance the center of the square is away from the bottom-left corner of the workspace (in this case, $[-1,-1]$). This is the prismatic joint of the robot.
- α, the angular offset of the prismatic element from the $x-$axis. This is the revolute joint of the robot.

Use both of these values to determine the full location in workspace x, y, θ of the square. Below is a pictoral representation of these values: