

MEAM 620

Programming Assignment - I

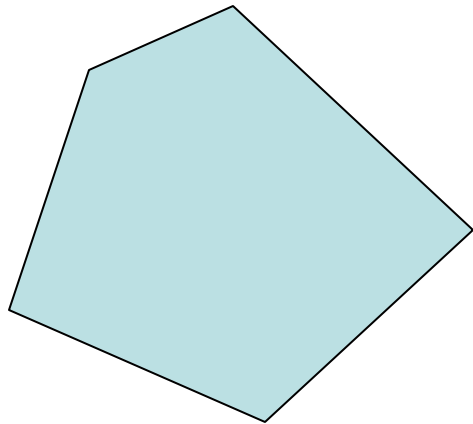
- Collision checking between two sets of convex polygons
- One set of polygons represents the shape of the robot
- The other set represents the shape of the static obstacles
- The polygons of the robot should be able to be transformed to any given configuration

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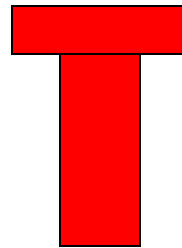
- Description of the test procedure:
 - Randomly generate a configuration for the robot;
 - Transform and draw the polygons of the robot to the new configuration;
 - Check whether the polygons of the robot at the new configuration have collision with those of obstacles
- Any programming language you prefer
 - Using existing collision checking functions, e.g. “inpolygon” in Matlab, is not allowed.
- A webpage for the results, code, brief description of methods and how to run the test
- Due March 1, 2007

Illustration of the Assignment

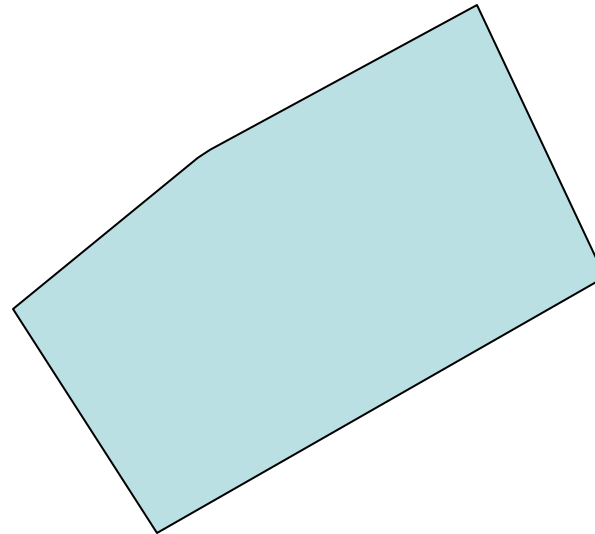
Given: two sets of convex polygons



Two blue polygons: the shape of the static obstacles

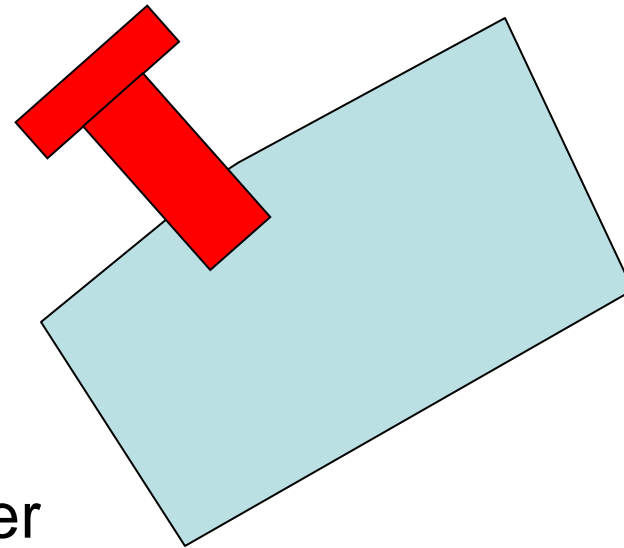
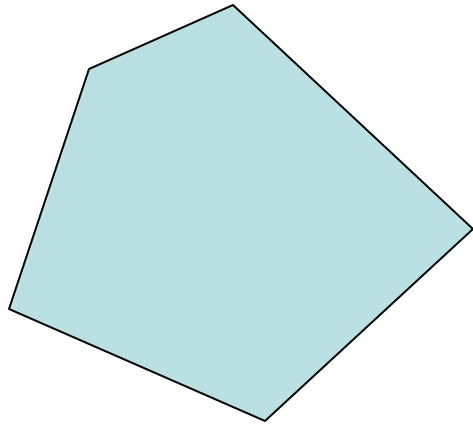


Two red polygons: the shape of the robot



Expected Test Procedure

Step 1. The polygons of the robot are transformed and drawn at the given configuration.



Step 2. Check and report whether the polygons of the robot at the given configuration have collision with obstacle polygons.