

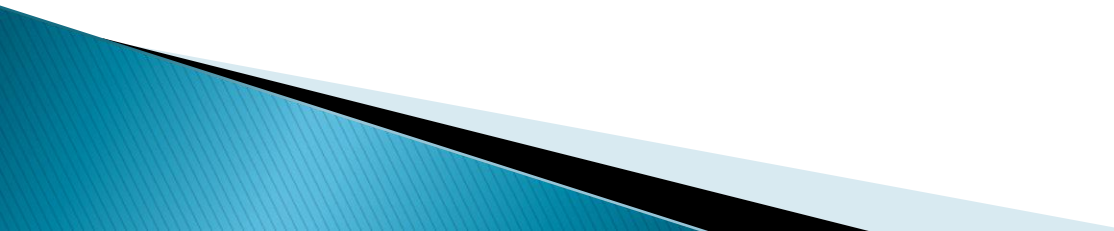
Planning high quality motion paths for robots

Workshop, Spring 2009

Barak Raveh & Naama Mayer



On the Agenda

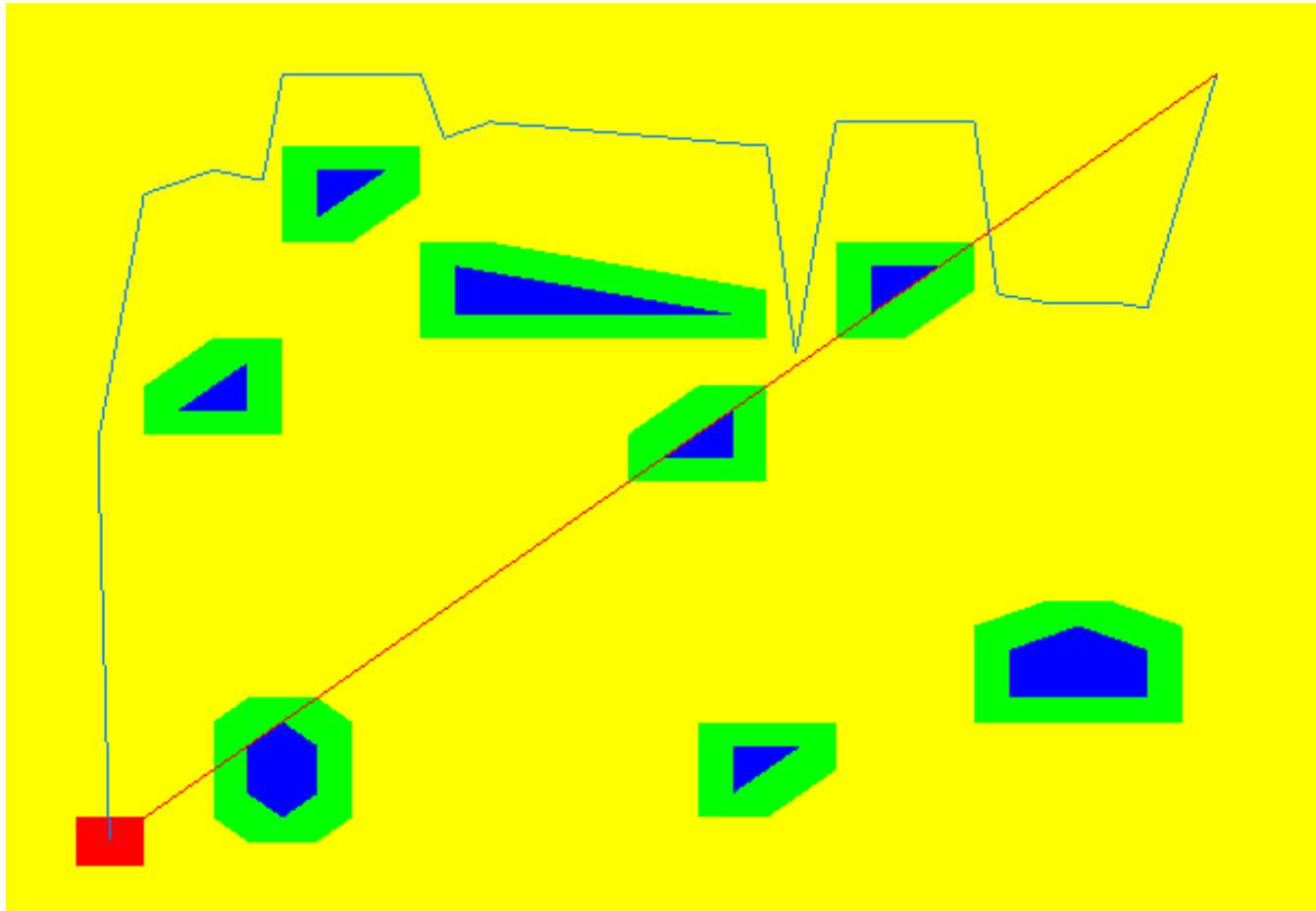
- ▶ CGAL - in brief
 - ▶ Demo & algorithm explanations
 - ▶ Your projects
- 

CGAL

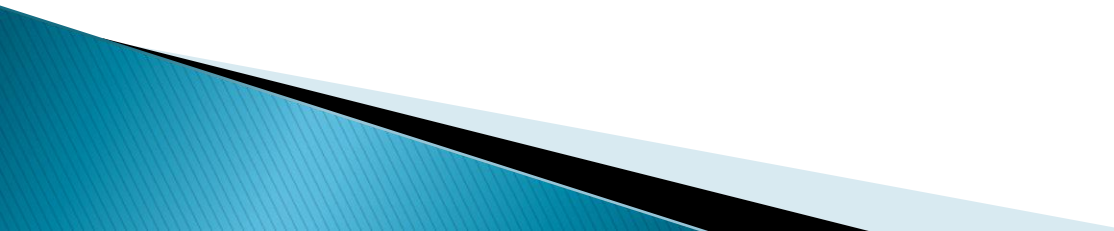
- ▶ Refer to the ACG website – Ophir Setter's slides

<http://acg.cs.tau.ac.il/courses/workshop/spring-2008/software-tools.pdf>

Demo



Algorithm steps

- ▶ Compute Minkowski sum of the rotated robot and the obstacles
 - ▶ Compute the configuration room
 - ▶ Vertical decomposition
 - ▶ Extract path using Dijkstra (boost)
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Path viewer

- ▶ Using Glut , OpenGL toolkit

<http://www.opengl.org/resources/libraries/glut/>

- ▶ Designed for constructing small to medium sized OpenGL programs
- ▶ Optional

Your project

- ▶ Heuristics for smoothing paths
- ▶ Proposed solution for 2 polygons – refer to the paper by Shay Hirsh & Dan Halperin
<http://acg.cs.tau.ac.il/projects/internal-projects/hybrid-motion-planning-coordinating-2-discs/hybridmp.pdf>
- ▶ Solution for several polygons

Questions ??

Enjoy 😊