

Nirvana's On a Plane: Building Intuition for Planar Topological Robots

Bob Short

10/6/2015

The field of topological robotics is a relatively recent development in algebraic topology. Much of the history traces back to the mid-80s and early 90s with topologists examining configuration spaces and engineers looking at inverse kinematics problems. In the past decade, engineers and topologists have started comparing notes and finding fruitful interactions in both fields.

In this talk, we will look at examples drawn from both Kevin Walker's undergraduate thesis and Michael Farber's book Invitation to Topological Robotics to gain some understanding as to how these planar robots work. In particular, we will define a planar polygon linkage and determine, in an intuitive sense, what the configuration space is for some specific examples.