

Some applications of distributed estimation and control

Abstract:

=====

In this talk I will discuss several applications of distributed estimation and control: Kiva Systems, a company that uses hundreds of mobile robots to move inventory in distribution facilities; the Balancing Cube, a structure that can balance on any one of its edges or corners using six rotating mechanisms on the cube's inner faces; the Distributed Flight Array, a flying platform consisting of multiple autonomous single propeller vehicles that are able to drive, dock with their peers, and fly in a coordinated fashion; the Flying Machine Arena, a research-driven airspace where vehicles teach themselves -- and each other -- how to fly.

BIO

===

Raffaello D'Andrea is Professor of Dynamic Systems and Control at ETH Zurich and Technical Co-Founder of Kiva Systems, a company that develops adaptive and self-configuring warehouse automation systems using hundreds of networked, mobile robots.

Also a creator of dynamic sculpture, he has shown his work at international venues including the Venice Biennale, the Luminato Festival, Ars Electronica, and ideaCity; two of his pieces are in the permanent collection of the National Gallery of Canada.

He is an IEEE Fellow and a recipient of the IEEE/IFR Invention and Entrepreneurship Award, a United States Presidential Early Career Award for Science and Engineering, and two best paper awards from the American Automatic Control Council and the IEEE. He was the faculty advisor and system architect of the Cornell Robot Soccer Team, four-time world champions at the international RoboCup competition in Sweden, Australia, Italy, and Japan. He is also a recipient of a National Science Foundation Career Award and several teaching awards in the area of project-based learning.