

ANNUNCIO DI SEMINARIO

Trajectory Tracking and Obstacle Avoidance in Mobile Robotics

da parte del

Dr. Ing. Simon G. Fabri

Senior Lecturer in Automatic Control Engineering,
Head of Department of Electrical Power & Control Engineering
Faculty of Engineering - University of Malta
Msida MSD06 - Malta

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ABSTRACT:

This seminar will discuss two problems in mobile robotics. First we shall consider the problem of effecting trajectory tracking in the presence of obstacles. Trajectory tracking and obstacle avoidance are usually treated as two separate tasks in mobile robotics. The former task addresses the issue of controlling the robot so as to follow some desired trajectory in the absence of obstacles. The latter task addresses the issue of planning a path for the robot to move from a start position to some goal position without colliding into obstacles.

In this talk, we shall propose and compare a number of schemes for amalgamating these two tasks, resulting in the capability of effecting trajectory tracking with obstacle avoidance.

The second problem will address the issue of trajectory tracking under uncertainty. A discrete-time adaptive control scheme utilizing artificial neural networks will be proposed to handle this problem. No off-line neural network pre-training is assumed and the network weights are adjusted recursively during robot operation by using Kalman Filter techniques on the multiple-input, multiple-output stochastic model of the mobile robot's error dynamics.