

PhD Proposal MAP-I

Global Self Localization Using Partially Occluded Visual Landmarks

Supervisors and Research Units

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Abstract

Self Localization based on Vision Systems is very interesting because such method is inexpensive, intrinsically safe to humans and each frame can supply a number of measurements. Vision systems are very frequent in robotics and are used extensively for example in robotic sports. The problem with vision systems is the large amount of processing power needed for processing each frame. Real Time color image processing must be used.

The State of the Art in visual self localization uses natural features and artificial landmarks to supply self localization information to the robot. However, in dynamic environments, it is easy to have partially occluded landmarks that still can supply good localization information that previous systems have chosen to discard.

Objectives

Specific Goals include:

- Collect information from natural landmarks (natural features of the world)
- Design innovative artificial landmarks
- Advise on landmarks less likely to be occluded
- Advise on landmark uniqueness
- Gather information about the visible portion of the landmark
- Estimate, when possible, a (x,y,θ) relative position to the identified landmark

Additional Information

Complete description available upon request.

Proposal integrated in Project FCT/PTDC/EIA/70695/2006 “ACORD: Adaptative Coordination of Robotic Teams”.