Course Unit Description - (TAVRU)

(Advanced Vision Topics for Robotics)

(Mestrado em Engenharia Electrotécnica e de Computadores)

Academic year: 2008/2009

Subject group: Automação e Robótica

	Semestral	**Optional**		
Mode of study	Diurno	**Hours / Week**	**T-**Teórica	2
			PL-Prática-Laboratorial	2
Year	1º		**OT-**Orientação Tutorial	1
Semester	2º			

ECTS 3

Objectives

This course intends to provide the theoretical and practical background for the usage, selection, application or development of advanced vision systems for autonomous systems.

Course Contents

Image Formation, projection and camera models.
Basic image processing.
Image segmentation and edge detection.
Motion and Optical Flow
Stereo and multi-camera vision
Vision systems calibration

Recommended reading

[1] Linda G. Shapiro, George C. Stockman, “Computer Vision”, 1º edição, Prentice Hall, 2001
[2] Yi Ma, S. Soatto, J. Kosecka, and S. Sastry, “An Invitation to 3-D Vision: From Images to Geometric Models”, Springer-Verlag, November 2003.
[3] E. Trucco and A. Verri,“Introductory Techniques for 3D computer Vision”, Prentice-Hall, 1998
[4] D. Forsythe and J. Ponce, “Computer Vision: A Modern Approach”, Prentice-Hall, 2003
[5] Richard Hartley, Andrew Zisserman, “Multiple View Geometry in Computer Vision”, Cambridge University Press; 2 edition, 2004

Teaching Methods

Theory concepts presentation with consolidating practical examples and exercises done in the lab classes, and research and implementation works to be done extra classes.

Assessment methods

The final grade is composed by the assessment of following components:
Practical exercises resolution in classes, and one research work and one implementation work, both composed by a written report, and oral presentation.

	Name
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Lecturer:	José Miguel Soares de Almeida (JSA) José Manuel Andrade de Matos (JMA)