



**TAIWAN PROGRAM 2019
EXPRESSIONS OF INTEREST**

CSIC SCIENTIFIC SUPERVISOR: Mariella Dimiccoli	
EMAIL: mdimiccoli@iri.upc.edu	PHONE NUMBER: +34 93 4015786
INSTITUTE/CENTER NAME: Institut de Robòtica i Informàtica Industrial (CSIC-UPC)	
ADDRESS: Parc Tecnològic de Barcelona. C/ Llorens i Artigas 4-6, 08028, Barcelona, Spain.	
BRIEF DESCRIPTION OF THE RESEARCH GROUP: The research of PERCEPTION AND MANIPULATION group focuses on enhancing the perception, learning, and planning capabilities of robots to achieve higher degrees of autonomy and user-friendliness during everyday manipulation tasks. Some topics addressed are the geometric interpretation of perceptual and semantic information, construction of 3D object models, action selection and planning, reinforcement learning, and teaching by demonstration.	
CENTER/RESEARCH GROUP'S WEBSITE: https://www.iri.upc.edu/research/perception	
NUMBER OF STUDENTS WILLING TO WELCOME: 1	
BRIEF DESCRIPTION OF THE STUDENT ACADEMIC BACKGROUND: Excellent programming skills in Python. Background on machine learning and computer vision. Knowledge of deep learning theory and frameworks is a plus.	
BRIEF DESCRIPTION OF THE STUDENTS TASK: Recently, the computer vision community is showing an increasing interest in the automatic discovery, quantification and analysis of social interactions from images and videos [1,2]. Wearable cameras such as the popular GoPro offer the opportunity to capture naturally-occurring interactions from an egocentric perspective (i.e. from the subject's own point of view). This egocentric paradigm is particularly useful for analyzing social interactions since the camera wearer naturally move to provide a clear view of the people he/she is interacting with, so that face occlusions are naturally minimized. The student's task will be to develop a deep learning based model for automatically determining the engagement of a wearable video camera user in social interactions captured in a variety of environments and in presence of multiple people. This work has direct applications to assistive robotics, allowing to equip assistive Robots with the ability to understand social signals and to behave in a socially acceptable manner. [1] Q. Sun, B. Schiele, and M. Fritz, "A domain based approach to social relation recognition," in Proceedings of IEEE Computer Vision and Pattern Recognition (CVPR),	



2017, pp. 21-26.

[2] M. Aghaei, M. Dimiccoli, C. CantonFerrer, and P. Radeva, "Towards social pattern characterization in egocentric photo-streams" *Computer Vision and Image Understanding (CVIU)*, vol. 171, pp. 104-117, 2018

€1000 FOR LIVING EXPENSES WILL BE THE FINANCIAL CONTRIBUTION FROM THE CSIC CENTER TO THE STUDENTS

Responsible

Researcher:

Mariella

Dimiccoli

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Center Director:

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ICU Manager:

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