LEARNING-BASED DENSE DEPTH ESTIMATION FROM STEREO AND MONOCULAR IMAGES

A course for PhD students, Alma Mater Studiorum, Università di Bologna, January/February 2019

Instructors
Matteo Poggi
Dipartimento di Informatica - Scienza e Ingegneria, University of Bologna
Email: m.poggi@unibo.it
Stefano Mattoccia
Dipartimento di Informatica - Scienza e Ingegneria, University of Bologna
Email: stefano.mattoccia@unibo.it

About the Course
Inferring dense and accurate depth measurement is of paramount importance for several 3D computer vision applications and recent years have witnessed a paradigm shift towards learning based methods. The course will introduce stereo vision principles and algorithms based on conventional methods. Then, we'll describe learning-based methods, representing state-of-the-art, for depth estimation from stereo and monocular cameras and strategy to infer confidence estimation.

Syllabus
- Introduction to depth from images and confidence estimation
- Learning-based confidence estimation methods and applications
- Deep-learning for depth from stereo images
- Deep-learning for depth from monocular images
- Domain adaptation methods

Learning and assessment modalities
The course will be organised in five slots of 4 hours each. It will be offered in either Italian or English at the preference of the audience. The final assessment consists of a technical report on a recent paper on one of the course topics.

Teaching materials
The instructors will provide slides and a list of bibliographical references and additional material. All the course material is in English.

Schedule
10/1/2019: 11-13 14-16 aula 5.1*
17/1/2019: 11-13 14-16 aula 5.1*
24/1/2019: 11-13 14-16 aula 5.1*
31/1/2019: 11-13 14-16 aula 5.1*
07/2/2019: 11-13 14-16 aula 0.2*

* Facoltà di Ingegneria, Viale Risorgimento 2, Bologna