

PUBLIC SELECTION BASED ON QUALIFICATIONS AND INTERVIEW FOR THE AWARDING OF NO. 1 GRANT LASTING 12 MONTHS FOR CONDUCTING RESEARCH IN ACCORDANCE WITH ART. 22 OF LAW OF 30.12.2010 NO. 240 AT GITT - CENTRE ON INNOVATION MANAGEMENT AND TECHNOLOGY TRANSFER OF THE UNIVERSITY OF BERGAMO AS PART OF THE PLAN "IMPROVES - PRODUCT AND PROCESS INTEGRATION FOR THE REALIZATION OF ELECTRIC MOTORS FOR ROAD VEHICLES" FINANCED BY LOMBARDY REGION IN THE CONTEXT OF THE LINE COVERED FOR RESEARCH AND INNOVATION COFINANCED BY POR FESR 2014-2020 (CUP E36D17000090009) - ACADEMIC RECRUITMENT FIELD 09/A2 – APPLIED MECHANICS - ACADEMIC DISCIPLINE ING-IND/13 – APPLIED MECHANICS

*announced with decree of the Rector Rep. no. 627/2017 of 07.11.2017 and posted on the official registry of the University on 07.11.2017*

### **RESEARCH PROJECT**

***TITLE: "Control strategies for mechatronic systems by means of "Vision in The Loop" technology"***

Computer vision is a very powerful tool for "sensorizing" a mechatronic system; it allows Computer vision is a very powerful tool for "sensorizing" a mechatronic system, because allows passive measurements of the environment without the need of physical contact. So it allows to measure several different kind of objects leading to great flexibility. The research project deals with the application and mainly the integration of a vision system into mechatronic systems at the aim to manage the information coming from the sensors (cameras) for the system's control. So the vision system becomes part of the control systems itself: this is "Vision in The Loop".

According to this technology, information coming from one or more cameras located on or around a robotic system are used as feedback of the control system, hence leading to another regulation loop in addition to the traditional position and velocity control loop. Therefore the integration of the cameras into the mechatronic system both from the configuration point of view and from the control software point of view becomes very important.

Additional topic of the research activity will be also the investigation on optimal control methods to maximize the dynamic performances of a mechatronic system controlled by means of the Vision in The Loop technology.