POLITECNICO DI MILANO

PhD in INGEGNERIA MECCANICA / MECHANICAL ENGINEERING - 39th cycle

PNRR 117 Research Field: AI4PHARMA: VISION SYSTEMS FOR ANOMALY DETECTION IN THE PRIMARY PACKAGING PROCESS

Monthly net income of PhDscholarship (max 36 months)
€ 1400.0
In case of a change of the welfare rates during the three-year period, the amount could be modified.

Context of the research activity	
Motivation and objectives of the research in this field	Nowadays the role of measurements is no longer limited to the estimation of physical quantities, but it also involves the smart processing of huge amounts of data in real time, to enable a full interaction with the surrounding environment and support the decision makers. Production line monitoring is quickly evolving, thanks to the possibility to share the data in real time in the cloud and to the availability of efficient processing approaches for big data manipulation. Industrial sensing benefits from the huge innovations in space research and consumer electronics, that continuously push for a strong development of sensors. In these scenarios, the availability of reliable and accurate data plays a crucial role. This project is aimed at the development and metrological qualification of measuring solutions for networked sensors and big data manipulation, for industrial and scientific applications. The main goals of the research include the optimization of the measuring approaches and data analysis to obtain a reliable representation of the monitored system or process. The joint analysis and optimization of the data acquisition and data processing for a network measurement will be a key point of the research.
Methods and techniques that will be developed and used to carry out the research	The research activity will use the typical methods of non-contact measurements and computer vision techniques, involving the automatic processing of images with classical machine vision algorithms, machine learning and

	classical machine vision algorithms, machine learning and deep learning techniques.
Educational objectives	We provide doctoral candidates with high-level scientific training, fostering and refining research and problem solving abilities by focusing on both theoretical and experimental skills. A PhD in Mechanical Engineering will be able to layout, draft and carry on original research, by leading a research group or working in a team.
Job opportunities	Our last survey on MeccPhD Doctorates highlighted a 100% employment rate within the first year and a 35% higher salary, compared to Master of Science holders in the same field. Job opportunities will range from companies in the field of machine vision and companies producing automatic systems for packaging in the pharmaceutical sector.
Composition of the research group	3 Full Professors 5 Associated Professors 2 Assistant Professors 15 PhD Students
Name of the research directors	Prof. Marco Tarabini

Contacts
Phone: 02.2399.8554 *Email:* marco.tarabini@polimi.it For questions about scholarship/support please contact phd-dmec@polimi.it.

Additional support - Financial aid per PhD student per year (gross amount)	
Housing - Foreign Students	--
Housing - Out-of-town residents (more than 80Km out of Milano)	--

Scholarship Increase for a period abroad	
Amount monthly	700.0 €
By number of months	6

National Operational Program for Research and Innovation	
Company where the candidate will attend the stage (name and brief description)	Innovative Security Solutions S.r.l.
By number of months at the company	6
Institution or company where the	King Abdullah University of Science and Technology (KAUST),

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candidate will spend the period abroad (name and brief description)	SUPSI - Scuola Universitaria Professionale della Svizzera Italiana
By number of months abroad	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information

Financial aid is available for all PhD candidates (purchase of study books and materials, funding for participation in courses, summer schools, workshops and conferences) for a total amount of euro 5.707, 13.

Teaching assistantship: availability of funding in recognition of supporting teaching activities by the PhD candidate. There are various forms of financial aid for activities of support to the teaching practice. The PhD student is encouraged to take part in these activities, within the limits allowed by the regulations.