POLITECNICO DI MILANO

PhD in BIOINGEGNERIA / BIOENGINEERING - 39th cycle

PARTENARIATO PNRR Research Field: COMPUTER VISION AND DATA SCIENCE FOR COMPUTER AIDED DIAGNOSIS FOR DIGESTIVE ENDOSCOPY

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	Digestive endoscopic procedures are recommended to investigate patients? symptoms, diagnose and sometimes treat different conditions or pathologies affecting the digestive system. Current diagnosis and treatment systems are still affected by errors in the detection of lesions or abnormalities in the mucosa, due to the incomplete survey of the mucosal surface and to non-uniform diagnostic power depending on operator experience.This research will contribute to the area of digestive endoscopy through the development of artificial intelligence systems that will assist endoscopists during the procedures. These algorithms will decrease the percentage of lesions or abnormalities not properly seen during endoscopy, and will assist operators in correctly identifying the histology or type of mucosal abnormalities. The project will involve the development and testing of computer vision and deep learning algorithms, as well as an evaluation phase in collaboration with our partner surgeons in Humanitas Research Hospital (Rozzano, MI). This project research is in the framework of?ANTHEM: AdvaNced Technologies for Human-centrEd Medicine?Codice PNC0000003 CUP B53C22006720001PIANO NAZIONALE COMPLEMENTARE (PNC)Decreto Direttoriale n. 931 del 6 giugno 2022 AVVISO PER LA CONCESSIONE DI FINANZIAMENTI DESTINATI AD INIZIATIVE DI RICERCA PER TECNOLOGIE E PERCORSI

	INNOVATIVI INAMBITO SANITARIO E ASSISTENZIALE da finanziare nell?ambito del PNC
Methods and techniques that will be developed and used to carry out the research	Computer-Assisted Design (CAD), computer vision algorithms, image pre-processing techniques, deep learning, machine learning, result statistical analysis
Educational objectives	During this PhD program the student will develop expertise in computer vision, deep learning, image analysis and pre-processing, data science.
Job opportunities	Knowledge gained during this PhD can lead to careers in academics, medical device industry, or as entrepreneurs heading new start-up companies
Composition of the research group	1 Full Professors 1 Associated Professors 1 Assistant Professors 15 PhD Students
Name of the research directors	Prof Elena De Momi Prof. Andrea Aliverti

Contacts
www.nearlab.polimi.it/medical https://advr.iit.it/ https://advr.iit.it/index.php/research/biomedical-robotics Prof. Elena De Momi - elena.demomi@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

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
Premiality Premialities will be recognized to the PhD student, up to EURO 1.000,00 (gross amount after completion of the II year) and up to EURO 2.000,00 (gross amount, after the completion of the III year) provided that they

demonstrate a significant contribution to the growth of scientific excellence the industrial valorization of research, the networking and communication activities of the Research Groups.

This project research is in the framework of?ANTHEM: AdvaNced Technologies for Human-centrEd Medicine?Codice PNC0000003 CUP B53C22006720001PIANO NAZIONALE COMPLEMENTARE (PNC)Decreto Direttoriale n. 931 del 6 giugno 2022 AVVISO PER LA CONCESSIONE DI FINANZIAMENTI DESTINATI AD INIZIATIVE DI RICERCA PER TECNOLOGIE E PERCORSI INNOVATIVI INAMBITO SANITARIO E ASSISTENZIALE da finanziare nell?ambito del PNC