



PhD in BIOINGEGNERIA / BIOENGINEERING - 40th cycle

PNRR 630 Research Field: ADVANCEMENT IN STENT IMAGING TECHNOLOGY

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

<p>Motivation and objectives of the research in this field</p>	<p>Percutaneous Coronary Intervention (PCI) is crucial for treating coronary artery diseases, yet it is often constrained by the ability to effectively assess stent expansion and positioning.</p> <p>The primary aim of this project is to enhance the accuracy of stent visualization during PCI procedures both in real-time and in post-processing.</p> <p>This can reduce the risks associated with stent misplacement and significantly improve long-term clinical outcomes.</p>
<p>Methods and techniques that will be developed and used to carry out the research</p>	<p>The project will develop and implement advanced and novel image processing algorithms based on machine learning and artificial intelligence. These algorithms will be designed to:</p> <ol style="list-style-type: none"> 1. Enhance stent visibility in real-time during PCI using data acquired with the Stent Boost technique. 2. Conduct retrospective image analysis to assess the correctness of stent placement and the effectiveness of dilation.
<p>Educational objectives</p>	<p>The PhD candidate will acquire advanced skills in:</p> <ul style="list-style-type: none"> •Developing and implementing machine learning and deep learning algorithms for medical image analysis. •Using advanced imaging techniques such as fluoroscopy and computed tomography.



	<ul style="list-style-type: none"> •Collaborating interdisciplinary with teams of cardiologists to analyze and interpret clinical data.
Job opportunities	<p>The PhD student will acquire useful skills for a future employment in</p> <ul style="list-style-type: none"> a) academic contexts, b) in research contexts in clinical laboratories, c) in biomedical industries developing new solutions and devices for interventional cardiology
Composition of the research group	<p>1 Full Professors 2 Associated Professors 2 Assistant Professors 3 PhD Students</p>
Name of the research directors	Alberto Cesare Luigi Redaelli

Contacts
<i>Alberto.redaelli@polimi.it - 02 23993375</i>

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)	DIGITEC S.R.L.
By number of months at the company	6
Institution or company where the candidate will spend the period abroad (name and brief description)	Università di Twente - Università di Delft
By number of months abroad	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
The PhD student will be hosted in the doctoral open space; he will also have access to the biomechanics research laboratory and to the computational facilities of the research group