POLITECNICO DI MILANO

PhD in BIOINGEGNERIA / BIOENGINEERING - 38th cycle

THEMATIC Research Field: ANALYSIS OF SPONTANEOUS SPEECH TO MONITOR HEALTH STATUS, QUALITY OF LIFE AND EMOTIONS

Monthly net income of PhDscholarship (max 36 months)
€ 1250.0 In case of a change of the welfare rates or of changes of the scholarship minimum amount from the Ministry of University and Reasearch, during the three-year period, the amount could be modified.

Context of the research activity	
Motivation and objectives of the research in this field	In recent years, and even more after the COVID pandemic, voice has been one of the most studied digital biomarkers. It is widely employed since it allows an ecological, rapid, and remote assessment of several aspects correlated to health status and quality of life. Analysis of voice features has been exploited to monitor the respiratory system, heart dysfunctions, the decline of the cognitive function, emotions and stress. The main advantage of the use of voice features is the possibility to perform the assessment on a daily basis and this might anticipate the diagnosis of diseases and provide useful indicators to clinicians to support their routine visits. The objective of this PhD will be to deeply investigate the use of voice features as additional biomarkers to evaluate the quality of life and the health status of different categories of patients. Voice features will be automatically derived from spontaneous speech in order to assure an ecological and transparent assessment. Different domains will be evaluated, namely type, frequency and duration of cough, cognitive decline, emotions and early sign of depression. This PhD project is part of the European Project I3Lung, whose ambition is to implement an innovative paradigm for integrated management of Non-Small Cell Lung Cancer (NSCLC) patients based on an Artificial Intelligence (AI) application able to fully implement truly individualized treatment decisions. Therefore, one of the main representative categories of patients investigated within this PhD project will be NSCLC patients.

	Information derived from voice analysis will be correlated with clinical outcomes collected at specific time points during a prospective clinical study.
Methods and techniques that will be developed and used to carry out the research	
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 Bioengineering will be able to layout, draft and carry on original research, by leading a research group or working in a team. More information can be found here: https://www.phdbioengineering.polimi.it/
Job opportunities	National and international academic and non-academic institutions and organizations, engaged in innovation, research and technical development; high-tech SMEs, government departments.
Composition of the research group	2 Full Professors 1 Associated Professors 1 Assistant Professors 12 PhD Students
Name of the research directors	ALESSANDRA PEDROCCHI

Contacts
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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	625.0 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
A shared desk and computer will be given to the student for the time needed to carry out research. Short periods of teaching assistantship are foreseen during the program.