Final Defense

PhD Course in Bioengineering – Final Thesis Defense

PhD Candidate: DAVIDE DI FEBBO
Advisor: Prof. Simona Ferrante
Co-advisor:

20.07.2021
h. 15:30
@ Microsoft Teams

Thesis: Novel eHealth methodologies to support the detection of age related decline

COMMITTEE MEMBERS

Prof. Filippo Molinari	Prof. Carlo Abbate	Prof. Giuseppe Pozzi
Politecnico di Torino	IRCCS Fondazione Don Carlo Gnocchi, Istituto Palazzolo Milano	Politecnico di Milano, Milano,

SCHEDULE OF THE DAY

15:30 – 15:40	Committee Meeting
15:45 – 16:45	Thesis presentation - Discussion
16:45 – 17:00	Committee meeting
17:00	Award Ceremony

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PhD in Bioengineering Final Defense

POLITECNICO MILANO 1863

PhD student: **DAVIDE DI FEBBO – XXXIII Cycle**

Thesis title: Novel eHealth methodologies to support the detection of age related decline

Advisor: Prof. Simona Ferrante – Deib - Politecnico di Milano

Abstract:

Nowadays, and more in the next future, the ageing population is determining a large impact on the public healthcare systems worldwide. To face the growing demand for long term services, the current healthcare model needs to shift its focus on the prevention and the early identification of chronic conditions, whose incidence is high in people aged 65+. Timely interventions are key to slow down decline and mitigate the symptoms in older individuals, besides limiting the use of hospital resources. Home monitoring technologies can allow the remote examination of the patients and the continuous tracking of the seniors' health status in their living environment. Therefore, early signs of decline could be recognised more quickly. However, some issues related to the acceptance of the daily monitoring systems by the users and to the data reliability in uncontrolled setting could represent a barrier for their effective application. The main objective of my PhD is to design and develop novel eHealth solutions such as IoT sensors, explainable artificial intelligence applications and decision support systems to enable the early detection and remote assessment of decline in older adults. In particular two solutions are here proposed: the exploitation of the ecological assessment of handwriting as daily life activity monitoring and a decision support system for the posterior interpretation and the evaluation of a complex neuro-psychological tests. These technologies were successfully tested and validated using specific protocols and data which simulated the real-application scenario. The remarkable results suggested that these may be promising solutions for detecting physical and cognitive decline in the home setting.