

RESEARCH TOPIC PRIME7

Perioperative kinetic evaluation using data from wearable devices

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Main facility

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Main field of interest

Anesthesia and intensive care, perioperative medicine

Abstract

The PhD project will focus on the collection and analysis of data from wearable devices in perioperative and hospital settings. Wearable devices will be applied to patients undergoing elective surgery or admitted to the intensive care unit. The study will span multiple care environments — from the patient's home during the preoperative phase, to the hospital ward, and/or the intensive care unit (ICU). This approach will enable the capture of mobility transitions associated with changes in clinical and neurological status. Additional physiological parameters collected through wearable devices will be integrated and correlated with clinical outcomes to improve the understanding of patient trajectories.

Main technical approaches

Required skills:

- Data analysis
- Knowledge of data science and machine learning
- Fundamentals of physiological signal processing
- Ability to work effectively in a multidisciplinary team
- Fluent in english

Scientific references

- M. Greco et al., "Wearable Health Technology for Preoperative Risk Assessment in Elderly Patients: The WELCOME Study," *Diagnostics*, vol. 13
- Angelucci A, Greco M, Cecconi M, Aliverti A. Wearable devices for patient monitoring in the intensive care unit. *Intensive Care Med Exp*. 2025 Feb 27;13(1):26.
- Davoudi A, Manini TM, Bihorac A, Rashidi P. Role of Wearable Accelerometer Devices in Delirium Studies: A Systematic Review. *Crit Care Explor*. 2019 Sep 13;1(9):e0027. doi: 10.1097/CCE.0000000000000027. PMID: 32166280; PMCID: PMC7063934.

Type of contract

PhD scholarship of € 21.000 gross per year awarded by Humanitas University. This sum is exempt from IRPEF income tax according to the provisions of art. 4 of Law no. 476 of 13th August 1984, and is subject to social security contributions according to the provisions of art. 2, section 26 and subsequent sections, of Law no. 335 of 8th August 1995 and subsequent modifications.

Borsa di dottorato pari a € 21.000 annui lordi erogata da Humanitas University. Importo non soggetto a tassazione IRPEF a norma dell'art. 4 della L. 13 agosto 1984 n. 476 e soggetto, in materia previdenziale, alle norme di cui all'art. 2, commi 26 e segg., della L. 8 agosto 1995, n. 335 e successive modificazioni.