INTERNATIONAL SUMMER SCHOOL ON WEARABLE SENSORS

Università Campus Bio-Medico di Roma | 10 - 12 July 2024

What is the School about?

The school emphasizes the interdisciplinary nature of wearable sensors, integrating aspects from engineering, computer science, and health sciences.

The school covers the development of wearable devices, exploring materials and fabrication techniques that are suitable for various applications, from clinical settings to sports. The algorithms section delves into the data processing and analysis methods essential for interpreting the vast amounts of data generated by wearable sensors.

In clinical settings, wearables are used for continuous monitoring of vital signs, early detection of health conditions, and rehabilitation tracking. In occupational settings, these devices focus on ergonomics, monitoring stress levels, and ensuring the safety of workers in high-risk environments. Lastly, in sports, wearables are tailored for performance optimization, injury prevention, and biomechanical analysis.

Main topics

- Design Principles of Wearable Sensors
- Data Processing Algorithms for Wearables
- Wearable Technology in Clinical Applications
- Occupational Health and Safety Wearables
- Sports Performance and Biomechanics
- Innovations in Wearable Sensor Materials and Fabrication
- Emerging Trends in Wearable Sensors

The school's curriculum is designed for students, researchers, and professionals seeking to advance their knowledge in wearable technology, offering a blend of theoretical knowledge and practical applications to meet the diverse needs of healthcare, workplace safety, and athletic performance.

Who is the Summer School for?

This School is unique in the intent of establishing synergies between the different actors working in the field of physiological and movements monitoring with wearable sensors. Examples of potential attendees are PhD students, post-doctoral researchers, master students, young professionals, employee of companies, and other professionals with different backgrounds.

Venue and duration

Università Campus Bio-Medico di Roma - Rome - Italy
MS Teams

Duration: 3 days for a total of 24 hours
Language: English

REGISTRATION FEES

Attendance in presence	**320 EUR**
Attendance at distance	**170 EUR**

Technical sponsors IEEE Sensors Council ITALY CHAPTER

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Day 1 - 10 July

Emiliano Schena	Opening	09:00 - 09:15
Stefania Campopiano	Presentation of technical sponsors	09:15 - 09:30

Wearables for respiratory monitoring

John Dickinson	The importance of respiratory variables and how wearable technologies can help in this context	09:30 - 10:30
Daniela Lo Presti	Wearable sensors: available options and challenges	10:30 - 11:30
	Coffee Break	11:30 - 12:00
Alessio Gizzi	Mathematical modeling and computational optimization of wearable sensors	12:00 - 13:00
	Lunch	13:00 - 14:00
Carlo Massaroni	Algorithms for processing respiratory data from wearables	14:00 - 15:00
Daniela Lo Presti	Hands on session	15:00 - 18:00

Day 2 - 11 July

Wearables for cardiac monitoring

Carlo Massaroni	Introduction to the importance of using wearables and their applications for cardiac monitoring	09:00 - 10:00
Elzbieta Olejarczyk	Nonlinear analysis of heart rate variability	10:00 - 10:30
Nanshu Lu	Wireless dual-mode ECG and SCG e-tattoos for the mobile and continuous extraction of cardiac output	10:30 - 11:00
	Coffee Break	11:00 - 11:30
Soumyajyoti Maji	Impact and Challenges of Wearable Sensors in Cardiac Diagnostics & Patient Care	11:30 - 12:30
	Lunch	12:30 - 14:00
Omer Inan	Wearable Acoustic and Vibration Sensing and Machine Learning for Human Health and Performance	14:00 - 15:00
Carlo Massaroni	Hands on session	15:00 - 18:30
Social Dinner		20:00 - 23:00

Day 3 - 12 July

Wearables for movement monitoring

Andrea Mannini	Introduction to wearables for user's movement monitoring: empowering wearable sensors with algorithms	09:00 - 10:15
Elena Bergamini	Sensors and techniques	10:15 - 11:00
	Coffee Break	11:00 - 11:30
Raffaele Gravina	Programming Wearable Sensor Systems	11:30 - 12:30
	Lunch	12:30 - 14:00
Domenico Formica	Motion tracking with Magneto-Inertial sensors: an introduction	14:00 - 15:00
	Hands on	15:00 - 17:00

Data collection for project

	Wearable Technology Project	17:00 - 18:30
	A practical module where students design and prototype their own wearable sensors, applying the principles learned during the School.	

Click here for registration
https://wearableschoolucbm.weebly.com

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