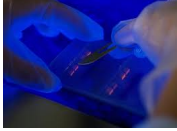


## Research topics



LESIM research activities are devoted to developing new algorithms and architectures for measurement signal processing and to study new methods for the characterization of equipment based on analogue-to-digital and digital-to-analogue converters. In particular, LESIM is developing (i) new algorithms for the automatic measurements of thin layers, (ii) methods for the automatic detection and classification of transient signals, (iii) new architectures of transient digitizers, distributed measurement systems based on standard protocols, and (iv) models and methods for the ADC and DAC metrological characterization, (v) standardization of automated non-invasive blood pressure measurement instrumentation calibration, (vi) human motion tracking systems for home rehabilitation based on wireless technology, (vii) wireless sensor networks for monitoring road traffic and relative environment conditions. These research activities are carried out in cooperation with foreign and Italian laboratories.

LESIM is one of the laboratories of IMEKO Working Group on ADC and DAC metrology.

Recently, the research interests of LESIM have been dedicated to the information visualization through virtual environments, and in particular to mapping measured values and their representation in simulation environments, such as those used for "serious games".

As for human motion tracking for physical rehabilitation, LESIM has been developing a [motion tracking system](#) for patients under treatment, that is based on a wireless Body Area Sensor Network (BASN) and inertial/magnetic units (IMu).

As part of the Instrumentation Control Electronics Measurement, interface algorithms have been developed through the use of the Brain-Computer Interface Technology (BCI). Video available [here](#) shows the control of a Digital Oscilloscope through the real-time analysis of EEG data.

### Emerging Technologies for Measuring

The extended version of the presentation "**Emerging technologies for measuring**" held by Prof. Pasquale Daponte during 2016 IEEE Instrumentation and Measurement Technology Conference (I2MTC2016 - Taipei, May 25, 2016) is available.

[Click here for download the presentation.](#)