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CONTROLO 2022
CAPARICA-PT

Innovation in Engineering Education

The role of ICT and mobile devices in classroom and labs

Maria Teresa Restivo

What's new?

We have been facing the biggest global health problem, now potentiated by the political crisis – the war in Ukraine (a multi-dimensional disaster with unknown limits)

Simultaneously, we have to deal with **climate change**, **biodiversity loss**, **digital transformation** and **aging population** (2019 - 1 in 11 people are over 65; In 2050 - 1 in 6 will be over 65)

For the future of democratic societies, **sustained growth**, **entrepreneurship** & **employment**, the world strongly needs the solution for this equation:

education + research + innovation
=
HIGHER EDUCATION

In particular

Engineering Education

What means Innovation in Engineering Education

Old Needs

- HEIs offering continuous teaching development
- Teaching activity recognition
- HES supporting the HEIs on those perspectives

Therefore
teachers are expected
to use available tools to create their own pedagogy adequate to each one of their topics

Incorporating the best cognitive tech tool doesn't solve the teaching problems -> those are beyond technology

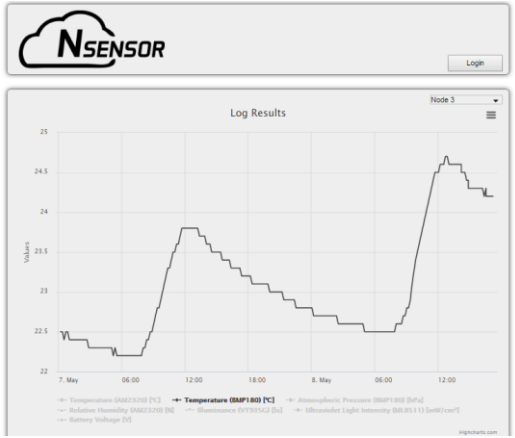
But technology brings very interesting and powerful helps &&&&
NOW, many of us are sensitive to the use of technology!

LIM Goals – slide recovered from 2019

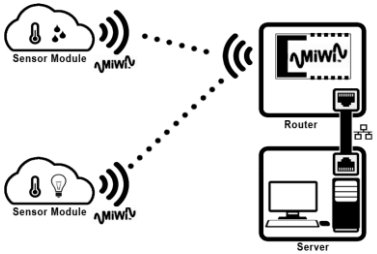
19 years linking experimental engineering education and R&D activities

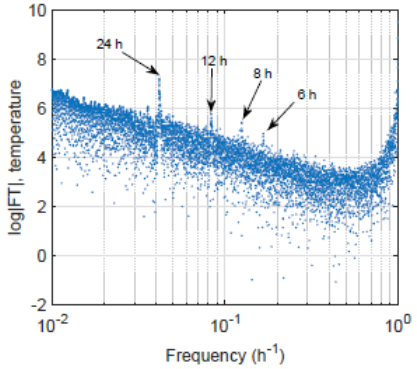
- empowering the developed modern online experimentation resources to support coursework and familiarizing students with IoT
- intensifying experimental activities in multidisciplinary areas such as engineering, medicine, nutrition, rehabilitation, sports, and multimedia, involving students/researchers/experts from these varied disciplines
- exploring project-based learning, mentoring and coaching approaches involving MSc & PhD students, and granted graduated, final projects, and also younger learners in formal, non-formal and informal learning strategies

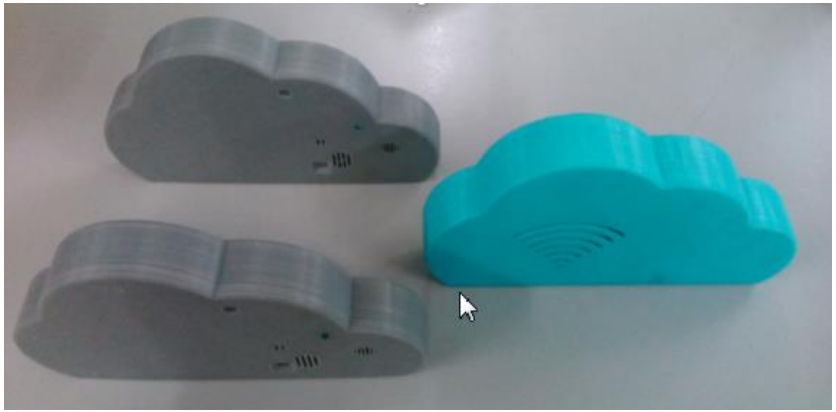
Examples of Past Works @ LIM



Wireless environment monitoring system

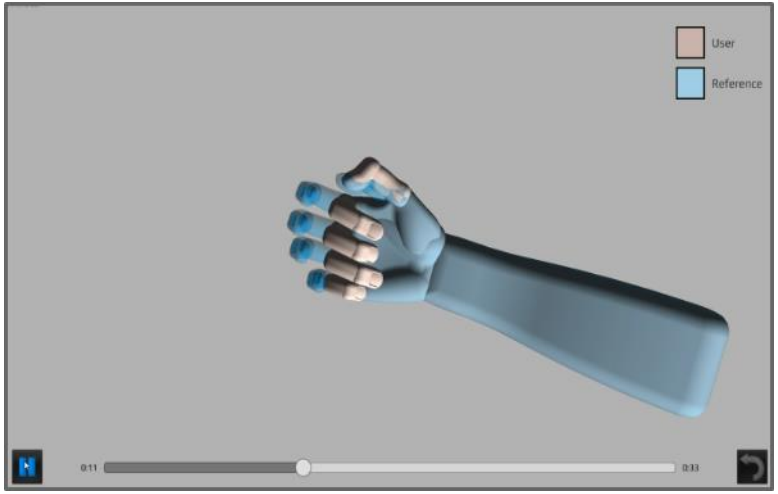






Examples of past works @ LIM

Instrumented glove in virtual environment (CORe) for distant rehabilitation



14 flexible sensors (4x3 + 1x2)

Accelerometer and IMU

Wireless Communication

Examples of past works @ LIM

Reading Acquisition Problem

Understanding this new problem to develop an interactive game

The Role of ICT in Engineering Education

The use of technology in EE is of paramount;

I totally subscribe that students need to know the technologies they will find in their future working environment – **let's use them!**

online experimentation (remote, virtual simulators, virtual and augmented reality applications, cross reality, and all the supporting hardware for those technologies - headsets, sensorial gloves, haptics, mobile devices), image recognition, data analyses, Machine learning, … are everywhere

Challenges in Engineering Education

How to get advantage from Its?

YES!

WE NEED FACING THE CHALLENGES BUT

THESE ARE NOT NEW

Maria Teresa Restivo