Embedded Systems & Smart Sensors
alessandra.flammini@unibs.it, Tel. +39-030-3715627/445, Fax +39-030-380014

The research group managed by Alessandra Flammini, includes: Paolo Ferrari, Emiliano Sisinni, Alessandro Depari, Stefano Rinaldi, Francesco Venturini and some Ph.D. students and holders of research grants.

Research activities include:

• **Real-time Communications for smart grids and industry; Clock Synchronization**
  Experimental characterization and development of solutions and tools for smart grids (IEC61850) and industrial communications with particular attention to powerline communications and Real-Time Ethernet (RTE). The group developed, in cooperation with Gefran, the first Italian RTE (GDNET). It strictly cooperates with CSMT (Profibus and Profinet Competence Center).

• **Wireless sensor networks for metering and industry**
  The group developed patents and proprietary solutions for local companies and, recently, experienced with M-bus for metering and WirelessHART and ISA-100 for industry. Recently, the main research activity has concerned new technologies for multistandard wireless communications (Software Defined Radio) and synchronization.

• **Electronic noses, wearable sensors and smart devices**
  The group designed new electronic circuits (ASIC) and instruments for sensor experimental characterization (high-value sensor resistance measurement - from kΩ to over 100GΩ -, small value sensor capacitance -pF-). Attention is now focused on wearable sensors for health and exercises and smart devices for drugs, medicines and nutrition.

Main cooperation with national and international research units


Financed Project for more than 1M€
Smart Cities and Communities, Smart Grids, aging, ambient assisted living
Embedded Systems & Smart Sensors
alessandra.flammini@unibs.it, Tel. +39-030-3715627/445, Fax +39-030-380014

Internationalization: cooperation with international research agencies, international conferences, awards

Wearable sensors and smart devices

Cooperation with C.S.M.T.
www.csmt.it

Measurement instruments, sensor interfaces

Synchronization for energy distribution: IEEE1588 and IEC61850, smart grid

Wireless sensor networks for industry: development of “ad hoc” solutions, active presence in Commissions for emerging standard

Electronic nose (bread baking aromas)

Distributed instrument for Real Time Ethernet and wireless traffic (IEEE802.15.4) analysis

Thermocouple network (128 samples/s)

Wireless sensor networks: Italian website for local companies and students (http://www.ing.unibs.it/~wsnlab/)

Wireless Communications: if the number of new technologies is growing up too fast, architectures change (Software Defined Radio, multistandard communications)

Samsung Galaxy S4

UTCus Research

GNU Radio

University of Brescia, Dept. of Information Engineering, Embedded Systems and Smart Sensors
Publications:

Publications:

