Matteo Pezzoli research activity

Electronics Instrumentation Lab.

Research fellow Matteo Pezzoli has worked, as a research fellow for the University of Bergamo, on a project aimed at developing a measure and characterization setup for graphene-based membranes meant for interconnecting a network of wearable sensor nodes. The characterization has been focused mainly on the membranes resistivity and on the development of proof-of-concept prototypes to demonstrate possible use of these materials as a mean of low-speed signal transmission.

R&D engineer Matteo Pezzoli has worked as a R&D engineer for 221e srl. During this period he has participated in the development of the firmware for a multi-node system used in the monitoring of inertial data gathered during training or rehabilitation sessions for athletes of various disciplines; the system and the firmware have been developed to be composed of three data-gathering nodes collecting inertial data and a single master node with wireless communication capabilities towards the data nodes (bluetooth) and towards a cloud server (WiFi). Afterwards, he participated in the development of the second revision of the aforementioned system, mainly in the hardware development and layout of both the master and data nodes. Matteo Pezzoli has developed both the bootloader and firmware for this project, in addition to a custom firmware handling the WiFi management, meant as an IP block, reusable in future projects. During the period dedicated to the support and maintenance of this project, he has developed the hardware and layout of an indoor air quality monitoring system, in particular meant to gather data regarding temperature, humidity and concentration of various gases or compounds (CO, CO_2 and VOCs). He also aided in the development of both the bootloader and application firmware of the system, focusing on the interface with the data server. During this time, Matteo Pezzoli has participated in internal projects, such as the characterization of the throughput speed of a bluetooth link using an STMicroelectronics module and a protocol for time synchronization in a wireless sensor node network.

Ph.D. student Matteo Pezzoli is currently a Ph.D. student for the Microelectronics curriculum at the University of Pavia and he is a research fellow for the Italian National Institute of Nuclear Physics (INFN, CSN 5). He is involved in the ARCADIA (Advanced Readout CMOS Architectures with Depleted Integrated sensor Arrays) project, on the development of IP blocks, in particular on the design of a bandgap voltage reference and LVDS transceivers for the project main demonstrator. He has been involved in the characterization of PFM3, a 32x32 pixel matrix meant for the next generation of X-ray FELs; the focus during this project has been on the characterization of the matrix performances at different temperatures. During his Ph.D. he also has participated in the post-irradiation characterization of a bandgap developed by the Bergamo and Pavia research groups for the Atlas project, in the RD53 collaboration.