



PhD in INGEGNERIA DELL'INFORMAZIONE / INFORMATION TECHNOLOGY - 40th cycle

Research Area n. 2 - Electronics

**THEMATIC Research Field: HARDWARE FOR EMBEDDED PROCESSING IN SMART
EYEWEAR**

Monthly net income of PhDscholarship (max 36 months)

€ 1400.0

In case of a change of the welfare rates during the three-year period, the amount could be modified.

Context of the research activity

<p>Motivation and objectives of the research in this field</p>	<p>The PhD research will focus on the design, fabrication, test and validation of electronic boards with sensors, microcontrollers (e.g., ARM-Cortex M55) and electronics (memories, energy management, BLE and WiFi connections) for embedded processing within smart eyewear devices, by exploiting hardware accelerators and energy optimizations. The research will aim at developing compact electronics for acquiring images/videos from cameras and environmental signals from sensor and IMUs, so to embed all required machine learning into hardware.</p>
<p>Methods and techniques that will be developed and used to carry out the research</p>	<p>The PhD student will employ circuitual simulators for designing microcontroller-based boards, programming languages for firmware and real-time systems, and tools for neural network processing, to recognize scenes, objects, user's actions and to navigate in both real and Augmented Reality world.</p>
<p>Educational objectives</p>	<p>The PhD student will acquire in-depth skills for conceiving, designing, simulating, developing and validating circuits, electronic boards, and electronic products with AI embedded into wearables.</p>
<p>Job opportunities</p>	<p>The research will open the way to broad career</p>



	opportunities in the field of circuit design and development of embedded systems in the field of wearables.
Composition of the research group	1 Full Professors 3 Associated Professors 1 Assistant Professors 3 PhD Students
Name of the research directors	Prof. Franco ZAPPA

Contacts
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Additional support - Financial aid per PhD student per year (gross amount)	
Housing - Foreign Students	--
Housing - Out-of-town residents (more than 80Km out of Milano)	--

Scholarship Increase for a period abroad	
Amount monthly	700.0 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information

EDUCATIONAL ACTIVITIES (purchase of study books and material, including computers, funding for participation in courses, summer schools, workshops and conferences): financial aid per PhD student.

TEACHING ASSISTANTSHIP: availability of funding in recognition of supporting teaching activities by the PhD student.

There are various forms of financial aid for activities of support to the teaching practice. The PhD student is encouraged to take part in these activities, within the limits allowed by the regulations.

COMPUTER AVAILABILITY:

1st year: Yes
2nd year: Yes
3rd year: Yes

The research will be developed within the Smart Eyewear Lab (SEL), the joint research laboratory



between POLIMI and ESSILOR-LUXOTTICA.