



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

Research Area n. 4 - Telecommunications

THEMATIC Research Field: EYE TRACKING FOR SMART GLASSES

**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><b>Motivation and objectives of the research in this field</b></p>	<p>The research conducted within the proposed PhD will focus on analyzing the 3D reconstruction of the environment surrounding the user of the smart glasses and estimating their own motion based on subjective environment acquisition (visual odometry), also using third-party sensors such as accelerometers or gyroscopes. All proposed algorithms must be capable of operating in conjunction across low-power devices with limited computational capacity like smart glasses, edge computing devices such as mobile devices, and remote processing with higher latency in the cloud.</p>
<p><b>Methods and techniques that will be developed and used to carry out the research</b></p>	<p>The research will therefore focus on developing innovative Simultaneous Localization and Mapping (SLAM) techniques that, building upon the state of the art, will be capable of operating in real-time on devices such as smart glasses, distributing computational load across edge computing and the cloud. The research will also delve into contextual interpretation by assessing moving objects or people within the scene and recognizing their trajectories to facilitate understanding of the interaction between the smart glasses user and the surrounding world.</p>
<p><b>Educational objectives</b></p>	<p>The PhD student will learn a series of techniques related to computer vision, distributed computing, and machine</p>



	learning by working on real systems. This will enable the acquisition of a high level of expertise in the topics covered and the techniques employed.
<b>Job opportunities</b>	The project will be developed within the JRC with Luxottica, so a first potential option for subsequent work could also be within the company itself. However, future job opportunities extend to all companies operating in the fields of computer vision, gesture/action recognition, and smart glasses.
<b>Composition of the research group</b>	2 Full Professors 2 Associated Professors 11 Assistant Professors 9 PhD Students
<b>Name of the research directors</b>	Prof. Marco Marcon

#### Contacts

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#### Additional support - Financial aid per PhD student per year (gross amount)

<b>Housing - Foreign Students</b>	--
<b>Housing - Out-of-town residents (more than 80Km out of Milano)</b>	--

#### Scholarship Increase for a period abroad

<b>Amount monthly</b>	700.0 €
<b>By number of months</b>	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.

5.707,20 Euro

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

DESK AVAILABILITY:

1st year: Yes

2nd year: Yes

3rd year: Yes