POLITECNICO DI MILANO

PhD in INGEGNERIA DELL'INFORMAZIONE / INFORMATION TECHNOLOGY - 38th cycle

Research Area n. 3 - Systems and Control

INTERDISCIPLINARY Research Field: DEVELOPMENT OF A GUIDE ROBOT FOR THE VISUALLY IMPAIRED TO BE USED IN STRUCTURED ENVIRONMENTS AND FOR PHYSICAL TRAINING

Monthly net income of PhDscholarship (max 36 months)
€ 1250.0
In case of a change of the welfare rates during the three-year period, the amount could be modified.

Context of the research activity	
Motivation and objectives of the research in this field	Interdisciplinary PhD Grant The PhD research will be carried out in collaboration with research groups of the PhD programme in "**DESIGN**". See https://www.dottorato.polimi.it/?id=422&L=1 for further information. The objective is to develop an autonomous guide robot prototype, designed according to the specific needs of blind and visually impaired people. This objective will also be made possible thanks to the development of wearable sensors capable of providing information, to the control system of the guide robot, relating to the patient's status. This technology aims at enabling a satisfactory life for the visually impaired and the elderly encouraging the use of public spaces without barriers and independently. https://www.deib.polimi.it/ita/progetti-di-ricerca/dettagli/431
Methods and techniques that will be developed and used to carry out the research	The project calls for the development of a full navigation system stack (perception and localization, path planning and path tracking) capable of interacting with the guided person through a haptic (force sensing) smart tether and other wearables

Educational objectives	The PhD candidate will develop the engineering skills required to design the autonomous navigation stack (algorithm design and implementation) as well as the Human Machine Interface aspects related to the well being of the user.
Job opportunities	The successful completion of the PhD programme will prepare the candidate to work as a developer of autonomous navigation systems both for the service robotics and automotive industries.
Composition of the research group	1 Full Professors 2 Associated Professors 0 Assistant Professors 3 PhD Students
Name of the research directors	Matteo Corno, Giuseppe Andreoni, Marcello Farina

Contacts
http://www.tedh.polimi.it/ https://www.move.deib.polimi.it/ Prof Corno 02-2399-4037 Prof. Andreoni 02 2399 8881

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	625.0 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
This programme is designed to closely interact with the ongoing Polisocial award BUDD-e (Blind-assistive aUtonomous Droid Device) https://www.deib.polimi.it/ita/progetti-di-ricerca/dettagli/431 LIST OF UNIVERSITIES, COMPANIES, AGENCIES AND/OR NATIONAL OR INTERNATIONAL INSTITUTIONS THAT ARE COOPERATING IN THE RESEARCH: Yape srl; Unione Italiana dei

Ciechi e degli Ipovedenti (UICI) ONLUS-APS; Fondazione Istituto dei Ciechi di Milano (ICM); ASST Grande Ospedale Metropolitano Niguarda

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
5.095,96 Euro per 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: individual use
2nd year: individual use
3rd year: individual use

DESK AVAILABILITY:
1st year: individual use
2nd year: individual use
3rd year: individual use