

## Company Description

The University of Deusto invites applications for several PhD projects to be performed in DeustoTech. Deusto Institute of Technology -DeustoTech- <http://deustotech.deusto.es/> ocate in Bilbao (Spain), is a Research Institute of the Faculty of Engineering at the University of Deusto, and was created with the mission of promoting research and postgraduate training in Information Technology and Communications (ICT) through the participation in research projects of interest to society and industry.

## Information

 Deadline: 2021-04-23  
 Category: Academia  
 Province: Bizkaia

 Country: Basque Country  
 City: Bilbao

## Company

Universidad de Deusto



## Main functions, requisites & benefits

### Main functions

Deusto Smart Mobility <http://mobility.deustotech.eu/>, a high performance research team recognized by the Basque University System, invites competitive applications for several PhD projects. A total of 3 PhD grants are offered to be performed in some of the following research topics belonging to the PERVASIVE COMPUTING area: Topic #PC1: Data-driven decision-support tools for better analysis of lower urinary tract problems in home settings The digital transformation of health and care will certainly help to increase the capacity of health care systems to deliver more personalized and effective health care at home with less time and resource wasting, in particular in rural areas. Consequently, new strategies are needed that can take us from face-to-face and reactive health care systems to remote and proactive systems, focused on an ageing population through continuous and non-intrusive care. One of the problems frequently associated with ageing is that related to the urinary system. The proposed research will focus on developing data-driven decision-support tools for early analysis of lower urinary tract problems with the aid of artificial intelligence. We look for automatic systems/platforms that combine dedicated hardware and software to provide relevant information about voiding in home settings. For further information: Alfonso Bahillo [alfonso.bahillo@deusto.es](mailto:alfonso.bahillo@deusto.es) Topic #PC2: Improving and fostering active living and wellness of people with dementia (PWD) from sensing to analytics It is necessary to promote new strategies of care and treatment to keep PWD living independently at home for longer. Monitoring the daily activities pattern and behaviour of PWD allow to identify changes that may help with the detection of anomalies, so as to provide prompt help and treatment. Therefore, we propose research, development and evaluation of advanced localization techniques making use of the latest smart devices available in the market with the aim of developing innovative and enhanced location-based services that foster active living and wellness of PWD. Technical environment: Signal processing, data fusion, machine learning and artificial intelligence techniques on data coming from satellite navigation systems, inertial sensors and/or RF interfaces, among others. For further information: Alfonso Bahillo [alfonso.bahillo@deusto.es](mailto:alfonso.bahillo@deusto.es) Topic #PC3: Gesture-based remote control with wirelessly connected passive sensors The power of gestures is an unbeatable reason to consider gesture control as a key element in Industry 4.0. As the capacity for machines to extend human capabilities continues to grow, the communication channels used must also expand, to control how systems work and tools operate. Allowing machines to interpret nonverbal commands such as gestures, further accuracy can be obtained than using touchscreens, extending the capabilities and productivity. In this scenario, wearable wireless sensor networks can enable the acquisition of the movements and postures of the human body in order to be interpreted as gestures. The proposed research will focus on the deployment of gestural interfaces using wearable passive sensors. These kinds of sensors harvest energy from different radio signals and do not need a power source or a battery; thus, they can be integrated into the clothes or uniforms to be used at particular scenarios. Using the signals obtained from different sensors (motion, positioning, audio, illumination, visual, etc.) a wide range of applications can be controlled. Among these applications, domotics, industry, or robotics can be highlighted. Industrial actuators such as industrial or cooperative robots are a perfect example of devices that can be controlled by gestures. For further