

**PHD SCHOLARSHIP 2018 DATASHEET**

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Business Division Business Area	Industry and Transport Advanced Manufacturing
Technology Platform	Autonomy and Flexibility
<u>Scholarship location</u> Province Building	Donostia – San Sebastian Gipuzkoa / Mikeletegi 7

**SCHOLARSHIP DESCRIPTION**

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**Scholarship title: 3D Vision for Scene modelling and understanding in the context of Autonomous Robotic Assembly**

**Brief description of scholarship:**

This PhD scholarship shall focus on the Vision/Perception aspect of robot guidance in assembly operations. Technically, it involves developing 3D vision algorithms, dense reconstruction, visual slam, matching pointcloud alignment semantic segmentation, learning, Active Vision, etc., and combines them in a Modelling and Understanding Pipeline that allows the robot to understand its environment to make decisions in real time.

**Detailed description of scholarship:**

Automating assembly operations is still a very important need for companies. But the context has changed and it is no longer a case of tens of thousands of units being produced where a robot can carry out the operation blindfolded. The current context demands small batch production that requires the robot to have a strong level of autonomy: it has to see, decide its operations and autonomously execute them to produce the components.

This PhD scholarship focuses on the Perception aspect to guide the robot: it has to have the capacity to see its surroundings, modelise them, and precisely recognise and locate objects and parts. This capacity allows the robot to calculate precise motion paths without collisions, and learn new operations via ‘teaching by demonstration’ techniques, such as learning the parts and operations.

3D vision algorithms, dense reconstruction, visual slam, matching pointcloud alignment semantic segmentation, learning, Active Vision, etc.

The scholarship should provide solutions to the problems identified in many companies and will have the highest level robot equipment and vision systems in the world.

**REQUIREMENTS:**

The PhD candidate shall meet the following requirements:

- **Degree and specialisation:** Computer and Automatics Engineering and Industrial Electronics.
- **Languages:** Spanish and English (B1 minimum), knowledge of French is desirable.
- **IT skills:** C++ programming, Python on Linux
- **The following will be a plus:** Experience in robot programming, 2D and 3D vision systems, command of Linux

**Further information and applications:** <http://bit.ly/2qEbk8j>