



PhD in BIOINGEGNERIA / BIOENGINEERING - 40th cycle

THEMATIC Research Field: ROBOTICS MACHINE VISION FOR INCREASING SAFETY AND ACCURACY OF A SPINAL DISCECTOMY

| Monthly net income of PhDscholarship (max 36 months) |
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| € 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 | |
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| Motivation and objectives of the research in this field | <p>The research is aimed at providing robotic assistance during delicate spine interventions.</p> <p>The robot will allow for a better surgical outcome, increasing the intervention safety and accuracy.</p> |
| Methods and techniques that will be developed and used to carry out the research | <p>The candidate will implement methods and techniques for robotic control and machine learning for computer vision. The research will be conducted in a joint agreement with Stryker (Germany).</p> <p>The research will be conducted at Politecnico di Milano (Nearlab, DEIB) and at the Stryker premises in Friburg (Germany).</p> |
| Educational objectives | <ul style="list-style-type: none"> •Acquire capabilities for controlling and interfacing human and robots; •Understanding the clinical needs and evaluate the effectiveness of the approach; •Disseminate scientific results; •Communicate scientific results in outreach events. |
| Job opportunities | <ul style="list-style-type: none"> •Research institutes; •research division in companies; •universities; •hospitals |



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| Composition of the research group | 1 Full Professors 1 Associated Professors 0 Assistant Professors 10 PhD Students |
| Name of the research directors | Prof. Elena De Momi |

| Contacts | |
|------------------------|--|
| Prof. Elena De Momi | |
| elena.demomi@polimi.it | |

| Additional support - Financial aid per PhD student per year (gross amount) | |
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| 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 |
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| <p>Educational activity: The student will be encouraged to attend to courses at POLIMI or abroad 2 / 3 in International Schools.</p> <p>Teaching assistantship: There are various forms of financial aid for activities of support to the teaching practice.</p> <p>The PhD student is encouraged to take part in these activities, within the limits allowed by the regulations.</p> <p>Computer and desk availability: the student will be allowed to access facilities of the DEIB.</p> <p>www.nearlab.polimi.it</p> <p>https://www.stryker.com/index.html</p> |