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| Title of the thesis | Soft Robot for mAss Spectrometry in Surgery |
| Acronym | STRASS |
| Reference number | 028 |

| Hosting institution | Employer |
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| Université de Lille Website: https://www.univ-lille.fr/home/ | Inria Website: www.inria.fr/en/centre-inria-lille-nord-europe |
| Hosting research unit 1 | Hosting research unit 2 |
| Name: DEFormable RObotic SofTware INRIA Lille Nord Europe /CRIStAL Acronym: DEFROST Identification number: DEFROST (INRIA – UMR 9189) Address: 40 Avenue Halley 59650 Villeneuve d'Ascq Website: https://team.inria.fr/defrost/ https://www.cristal.univ-lille.fr/equipes/defrost/ | Name: Proteomics Inflammatory Response Mass Spectrometry Acronym: PRISM Identification number: UMR U1192 Address: Université de Lille - Campus Cité Scientifique Avenue Paul Langevin - Bâtiment SN3 59655 Villeneuve d'Ascq Cedex France Website: http://laboratoire-prism.fr/ |
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| Thesis information | |
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| Keywords | Mass Spectrometry, Soft robotics, robotic assistance, medical devices, laser |
| Abstract | Surgery remains the first treatment in many pathologies. Surgery quality positively impacts patient quality of life. For solid tumors, it is also tightly related to the patient survival and the patient relapse. Despite important advances in surgical practices and the development of additional tools, surgeons are still facing issues to define the excision margins, find the loco-regional extension of the tumors and obtain a real-time in vivo diagnostic. The goal of STRASS is to develop a soft robotic device that will bring the surgeon a molecular information in vivo and in real-time while being compatible with surgery practices such as laparoscopy to help the surgeon to make the right decision and guide his/her gesture. The developed mini-invasive technology will combine in vivo molecular analysis by mass spectrometry. |
| Expected profile of the candidate | Skills/Requirements : <ul style="list-style-type: none"> • M.Sc. degree in computer science, robotics, engineering (or related fields) • Experience in C/C++, Python and Git • Experience with FEM modeling and mechanical design and CAD software • Familiarity with Matlab/Simulink and/or relevant computer vision library (e.g., ViSP, OpenCV, PCL) and/or control theory are a plus • Strong interest in scientific research • Scientific curiosity, large autonomy and ability to work independently |
| Application procedure | The application procedure is detailed on the European programme PEARL website www.pearl-phd-lille.eu . The funding is managed by the I-SITE ULNE foundation which is a partnership foundation between the University of Lille, Engineering schools, research organisms, the Institut Pasteur de Lille and the University hospital. |

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| | The application file will have to be submitted before April 15, 2020 (10h Paris Time) and emailed to the following address : international@isite-ulne.fr . |
| Net salary and Lump Sum | A net salary of about €1,600 + €530 per month to cover mobility, travel and family costs. |