

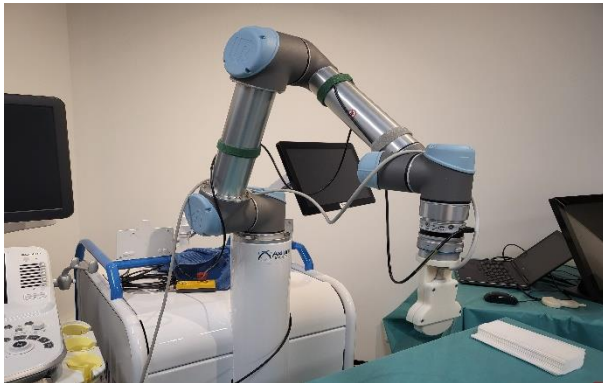
Percutaneous surgery guided by ultrasound and assisted with software navigation and robotics

IRCAD (Institut de Recherche contre les Cancers de l'Appareil Digestif) is a reference in the domain of mini-invasive surgery training, medical data processing and visualization. The role of its Surgical Data Science team [1] is to develop medical software to assist clinicians in diagnostics and procedures. Working at IRCAD is a great opportunity to get a glimpse at the computer-related challenges of the medical field and to work in an international and multi-disciplinary team, with direct impact on the patient quality of life.

Since 2022, IRCAD leads an ambitious research project about the democratization of ultrasound imaging using artificial intelligence. In this context, we are investigating multiple scenarios based on robotic arms to simplify percutaneous surgery procedures. A proof-of-concept has already been developed, which shows our capability to control a robot and perform basic gestures with a robotic arm holding an ultrasound probe.

The purpose of this internship would be to bring this prototype to a higher degree of maturity. With the help of our expert clinicians and our team of engineers, you will explore different scenarios to find the best approach. This will require working on these different topics: robotics control, tracking system, visualization, and user interface. The development will be performed using Sight [2], our C++ open-source library.

A very good skill of C++11/17/20 is required. You must also be able to integrate quickly into a large code base, to work independently and to be proactive. If you have previously worked on any significant software projects, please feel free to link the source-code or associated reports with your application.



References:

- [1] <https://www.ircad.fr/research/>
- [2] <https://github.com/IRCAD/sight>

Supervisor:

Flavien Bridault
 Director of Software Development,
 Surgical Data Science Team
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Skills:

3D geometry	C++ 11/17/20
Visualization	Qt
Fluent english	Git
	Gitlab/Github

Gross salary: 1100 € brut/month

Internship duration: up to 6 months

Beginning of the internship: Second quarter of 2023

Place : IRCAD – Strasbourg – Centre ville