



RESEARCH SCIENTIST



INSTITUT DE CHIRURGIE
GUIDÉE PAR L'IMAGE



Type de contrat: 2 Year Contract
(Possibility of extension)

Start of contract: As soon as possible

Compensation: Based on experience

CONTEXT

IHU Strasbourg is a unique research facility offering a true multidisciplinary environment to innovate in the image-guided surgery domain. Surgeons and engineers work closely together on practical as well as moonshot research ideas. Promising ideas are funded and supported internally, competitive research grants or partnership programs, while developed and validated ideas are translated to products through licensing and startup spin-offs. The institute has strong collaborations with academia and industry.

Located in the heart of Strasbourg's historic hospital campus, the University Hospital Institute of Image-Guided Surgery (IHU Strasbourg) is an international medical-surgical centre created in 2011, specialising in minimally invasive approaches (laparoscopy, flexible endoscopy, ultrasound, percutaneous surgery).

The IHU brings together care, research, training, and technology transfer activities in an exceptional setting for the benefit of patients. Surgeons and engineers work in close collaboration on applied and innovative research topics. Upstream topics (TRL 0 to 2) are funded and supported internally through competitive research grants or partnership programmes. Mature topics (TRL 3 to 5) are transformed into products through licensing and spin-off companies. The Institute has strong collaborations with academia and industry.

ABOUT THE LAB

The research group **CAMMA** (Computational Analysis and Modelling of Medical Activities) numbers approximately 30 researchers with interdisciplinary backgrounds, led by **Prof. Nicolas Padoy**. CAMMA aims at developing new tools and methods based on computer vision, medical image analysis, and machine learning to perceive, model, analyze, and support clinician and staff activities in the operating room (OR) using the vast amount of digital data generated during surgeries. CAMMA is a joint group of **ICube** at the University of Strasbourg and the Institut Hospitalo-Universitaire of Strasbourg (IHU Strasbourg). Our offices are located on the campus of Strasbourg's University Hospital in the ultramodern facilities of IHU Strasbourg, a walking distance from the beautiful historic city center of Strasbourg. Due to its unique location and collaborations, the group has privileged access to multiple resources for high-performance computing, preclinical and clinical platforms for fast prototyping, and offers new and modern office space for its members.

ABOUT THE PROJECT

CLINNOVA is a European initiative of the 'Grande Région' (<http://www.granderegion.net/>) which groups the French region Grand Est, Belgian Federation Wallonia-Brussels and Ostbelgien, German Saarland and Rhineland-Palatinate, as well as the Grand Duchy of Luxembourg. CLINNOVA project aims to unlock the potential of Artificial Intelligence (AI) and data science in healthcare, with the ambition of establishing a standard, sovereign, open, interoperable, European model. The overall objective of CLINNOVA is to enable a data-driven healthcare environment for AI solutions, which is based both on infrastructure investment and coordination between clinical stakeholders. The initiative aims to create a federated infrastructure of prospective standardised multimodal medical Big Data (e.g., biobanking, imaging) between participating institutes with a focus on autoimmune, inflammatory and cancer diseases. Research and development of AI algorithms on this amount of federated data is a unique exciting opportunity from both computer science and clinical perspective.



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MISSIONS

- The successful candidate will conduct research on federated learning for medical data in order to develop generalizable and efficient ML algorithms (e.g., self-supervision, domain shift, improved data utility detection).
- The ideal candidate has proven experience in Federated Learning through publication(s) and/or code (e.g. Github). Background in medical data (e.g., imaging, health records, genomics, etc.) is a plus but not a requirement.
- The candidate will have the opportunity to work with a multidisciplinary team of researchers and clinicians in France and Europe and shape research. In parallel, they will also have the chance to work with top industry partners through MLCommons to develop better tools for medical AI and thus gain major visibility.
- Competitive salary; 2-year appointment duration with the possibility of extension.

REQUIREMENTS

- PyTorch, Keras, ou Tensorflow
- Python or other language

RESPONSIBILITIES

- Perform research in Federated Learning algorithms
- Publish peer-reviewed papers
- Participate in research meetings with top industry partners and contribute code to open research community (e.g. MLCommons)
- Mentor interns

To apply, please email your CV and cover letter with title 'Research Scientist for FL' to:
alexandros.karargyris@ihu-strasbourg.eu



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