SYSTEMS ARCHITECT/ENGINEER

Contract Type: 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.

À PROPOS DU PROJET CLINNOVA

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 coordina tion 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.

MISSIONS

→ The candidate will take ownership to build the FL infrastructure for the Clinnova project.

→ The candidate has experience in designing, implementing, and running production services. The candidate is also comfortable in managing and monitoring infrastructure deployments.

→ The candidate is looking forward to making a difference in the healthcare domain. A background in medical machine learning and/or proven experience working in a healthcare organization is a plus but not requirement

→ The candidate will also have the opportunity to work with top industry partners through MLCommons to build better tools for federated learning in medical AI and thus, gain visibility.

→ Competitive salary; 2-year appointment duration with the possibility of extension.

REQUIREMENTS

→ System design and architecture

→ Distributed systems

→ IT security

→ Familiarity with Federated Learning (FL) or desire to learn FL

→ Preferable: knowledge of one of the FL frameworks: e.g. Nvidia Clara, OpenFL, TFF, PySyft, etc.

→ Python, Kubernetes, Docker, Cloud Computing (MLOps)

RESPONSIBILITIES

→ FL infrastructure for consortium

→ Identify and utilize open-sourced FL framework for utilization based on consortium needs

→ Hybrid cloud facilitation (cloud/on-premises)

→ System integrity and stability / Security

→ Integration with Sandbox environment provided by data warehousing partner (PRIeSM)

→ Integrate FL system with data warehouse

→ Experiment Versioning

→ Model, data cohort and results registries

→ Validation of model/data description deposit for consistency

→ Results Storage and Sharing

→ Contribute in open-source code community

→ Mentor and train junior team members

To apply, please email your CV and cover letter with title "Systems Architect" to:

alexandros.karargyris@ihu-strasbourg.eu