

Post doctoral position in image guided neurosurgery - EIC Pathfinder HyperProbe

About the role:

Applicants are invited to apply for a new vacancy at Post-doctoral level in image Guided Neurosurgery. Funded by the EIC Pathfinder HyperProbe project (hyperprobe.eu). This exciting and broadly scoped position is hosted at CREATIS Lab in the group optical medical devices. The work is aiming to develop optical devices and processing algorithms to guide neurosurgeons during the intraoperative neurofunctional assessment and connect these optical biomarkers to MRI based pre-operative clinical standard. The post is based within CREATIS lab in Campus Lyon Tech la Doua, Villeurbanne, France and the appointed applicant will carry out research in collaboration with Lyon University hospital (HCL), Saint-Etienne University hospital and Dijon University hospital.

The scope of the project is wide, encompassing data processing approaches and experimental investigation. **We encourage applications from candidates with varied academic and technical backgrounds.**

What you would be doing:

- Your research will be dynamic, with the scope to pivot and explore new opportunities as they arise, including novel approaches for optical biomarkers quantification, reflecting the innovative nature of the project.
- You will be continuing work already established within the lab, participating to the development of optical medical devices using hyperspectral optical imaging in the visible and NIR ranges, connecting optical acquisitions with MRI based clinical standard, in collaboration with engineer and PhD of the lab.
- You will participate to the experimental acquisitions in operative rooms in clinics in collaboration with PhD and master students and with medical doctors.
- You will start quickly and effectively, leveraging your experience in data analysis, machine learning and biomarkers quantification to contribute from the onset.
- You will liaise with external collaborators and stakeholders, including hardware vendors and research communities focused on emerging technologies, to ensure the project's success and alignment with broader research goals.
- You will prepare and present research findings at academic conferences and in peer-reviewed journals.
- You will mentor other junior researchers and PhD students involved in the project, fostering a collaborative and educational environment that encourages exploration of unconventional approaches.
- You will maintain detailed documentation of research activities and outcomes to ensure reproducibility and transparency.
- Your role may include contributing to the development of grant proposals and reports to secure additional funding and support for ongoing research initiatives.
- You will actively participate in departmental seminars, workshops, and other professional development opportunities to enhance your skills and knowledge.

What we are looking for:

- Educational background: PhD in Biomedical engineering, Optical Imaging/Physics, Biophotonics, Medical Imaging or AI, Image Guided Intervention or a closely related discipline, or equivalent research, industrial experience. Experience of working with clinical partners would be useful.
- Advanced expertise: Significant experience in computational methods, which may include machine learning. This could involve medical image analyses and processing or biomarker quantification approaches.

- Advanced expertise: Experience in Biophotonics, which may include light propagation in tissue models or optical medical imaging and related Physics driven topics.
- Experimental set up experience would be a plus but not mandatory.
- Research experience: Proven track record of conducting high-quality research, as evidenced by publications, conference presentations, or significant project contributions appropriate to career stage.
- Programming skills: Proficiency in programming languages commonly used in computational research, such as Python, C++, or specialized languages for computing platforms. Experience with computational libraries and willingness to learn platform-specific tools.
- Communication: Strong verbal and written communication skills, with the ability to present complex information clearly and concisely across different technical domains.
- Collaborative skills: Excellent teamwork and communication skills, with experience collaborating with interdisciplinary teams and external partners from diverse backgrounds.
- Problem-solving ability: Strong analytical and problem-solving skills, with the ability to adapt to new challenges and pivot research focus as needed across different computational paradigms.
- Project management: Experience managing research projects, including planning, execution, and reporting across multiple technical approaches.
- Mentorship: Ability to mentor and supervise junior researchers and PhD students, fostering a collaborative research environment that encourages exploration of diverse computational approaches.
- Innovation: A creative mindset with a passion for exploring and implementing innovative research ideas in alternative computing systems.
- Independence: Ability to work independently and take initiative in driving research projects forward across different computational domains.
- Time management: Excellent organizational skills, with the ability to manage multiple tasks and deadlines effectively while working with diverse technologies and approaches.

What we can offer you:

- The opportunity to work closely with the PI Prof. Bruno Montcel and team, and with collaborators Dr Fabien Schneider (Saint Etienne University hospital), Pr Moncef Berhouma (Dijon University hospital) and Dr Thiébaud Picart (HCL).
- The opportunity to continue your career at a world-leading institution and be part of our mission to continue science for humanity.
- Salary and advantage package offered by University Claude Bernard Lyon 1. (<https://www.univ-lyon1.fr/universite/travailler-a-lyon-1>)

Further Information

creatis.insa-lyon.fr/site/en/equipe-de-recherche/magics
hyperprobe.eu

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