

THE LABORATORY

The internship takes place in one of the laboratories at Brigham and Women's Hospital, led by **Charles Guttman**, Director of the Center for Neurological Imaging and Associate Professor of Radiology at Harvard Medical School. The laboratory conducts advanced medical research, primarily focusing on neurological disorders such as multiple sclerosis disease. Since 2015, this lab has been developing **Spine**, an innovative web application for crowdsourced analysis of biomedical images, such as MRI scans, aimed at advancing clinical research in **neuroscience**.

Spine consists of a web platform where researchers can set up and analyze their **experiments**, and a tablet-based game that invites public participation to help accelerate research outcomes. The platform operates through **workflows** that combine both **manual** and **automated tasks**, facilitating collaboration and efficiency in the analysis process.

THE HOSPITAL

Brigham and Women's Hospital is the second largest teaching hospital of **Harvard Medical School**

Along with **Massachusetts General Hospital**, it is one of the two founding members of **Mass General Brigham**, the largest healthcare provider in Massachusetts.

Location: Boston, Massachusetts, USA

HQ: 75 Francis Street, Boston, MA 02115

Size: Over 800 beds, with around 1,200 physicians and 3,500 nurses

Staff: Approximately 18,000 employees, including support staff and interns

Turnover: Part of Mass General Brigham, which has a budget of over \$16 billion

Gender Distribution: Strong emphasis on diversity, with leadership roles filled by both men and women

THE LOCATION

Assembly is a newly created neighborhood located in **Somerville** next to Boston. It is accessible via the **orange subway** line from downtown.

We worked in a large administrative building with an **incredible view** of Boston

Around it, there are several **eateries** (Shake Shake, poke restaurant, Sweet Green, a taqueria)

THE SECTOR

Overview of Sector: The hospital sector focuses on high-quality patient care, medical research, and technological integration. Major players compete for patients and funding, with innovation driven by partnerships in areas like telemedicine and precision medicine.

USP (Unique Selling Proposition): BWH excels through its commitment to cutting-edge research, world-class patient care, and advanced technology integration in daily medical practice.

Specialization / Fields of Particular Expertise:

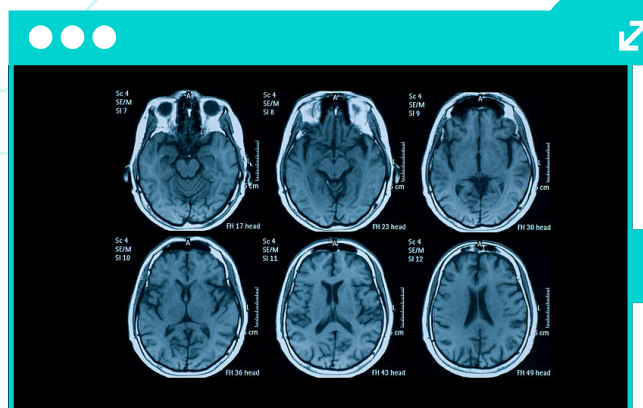
- Specialized care in cardiology, oncology, and neurology
- Pioneering research in regenerative medicine and genomics
- Advanced surgical techniques, including robotic-assisted procedures

Strengths:

- Strong affiliation with Harvard Medical School, enhancing research and training opportunities
- Comprehensive patient care across a wide range of specialties
- Proven track record of innovation in medical technology and patient outcomes

KEY ACTIVITIES

- 1. Accelerating Discovery:** Conduct neurological research using advanced neuroimaging techniques
- 2. Education & Involvement:** Educate and train participants in brain structure analysis
- 3. Collaborative Research:** Foster collaboration among scientists, students, and enthusiasts.
- 4. Advanced Techniques:** Implement cutting-edge methods for MRI image analysis
- 5. Clinical Applications:** Apply research findings to improve patient care and develop innovative neurological treatments.



PROJECTS

My project was to improve SPINE installation with container techniques such as **Docker** and **Podman**. Installation is now possible in **1 hour** compare to few days before
Jules

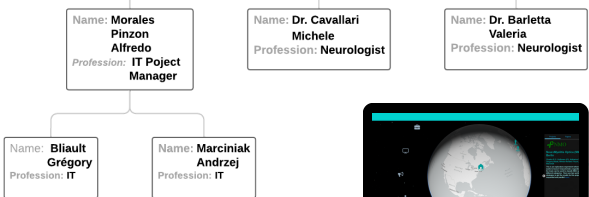
My role was to implement workflows for **automatic lesion detection** in 3D brain MRI images, tailored to meet the needs of neurologists
Nicolas

One of my projects was to explore the feasibility of using **NLP-to-SQL technology** to query medical databases using simple natural language without needing any SQL knowledge
Abdellah

TEAM

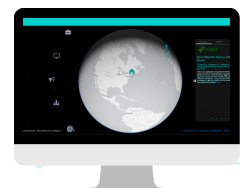


Team photo taken during the internship



Just above, here is an illustrative image of several **brain MRI slices**, similar to the ones processed during the internship

On the right, a screenshot of the **Spine** application's homepage.



THE INTERNSHIP

WORKING CONDITIONS :

The work took place in the **Department of Radiology**, in large office spaces designed for collaboration, with all necessary resources available.

THE JOB :

For tasks and responsibilities, refer to the *Projects* section above. Frequent meetings in English helped coordinate progress and improve team communication.

THE PEOPLE :

Daily interactions occurred with *Alfredo* for technical guidance and task assignments, and with *Charles* for regular progress updates. The team was international, with **many interns** from around the world.

PERKS :

The position offered a **hybrid work** model, with the option to work both on-site and remotely. The schedule was **flexible**, requiring 40 hours per week with adaptable working hours.

COMPANY CULTURE :

The culture was open and collaborative, with regular contact across all levels of the team. Two key meetings took place each week—on Monday mornings and Thursday afternoons—to share progress and knowledge.

PROFILE : THE IDEAL INTERN

The ideal intern has a strong interest in the **medical field** and in learning about **neuroimaging techniques**. Good knowledge in **data analysis**, **machine learning**, or **medical imaging** is valuable. The intern should be adaptable, able to work well in a team, and comfortable communicating in English, with a willingness to collaborate in an international environment.

MAIN REASONS TO RECOMMEND THIS INTERNSHIP :

Discover the American work culture, improve English skills, work with cutting-edge technologies, and collaborate with highly experienced professionals with impressive careers and expertise.