

Neurodegenerative disease progression : Development of numerical models, application to medical cohorts & deployment of real-life tools.

[Research Engineer] x [Data Scientist] x [Software Developer]

You are one of them & interested in neurosciences? This might be for you.

[KEYWORDS]

Machine Learning – Neurodegenerative disease progression – from Theory to Clinics

[GENERAL AIM]

Aramis Lab develops state-of-the-art technologies for the **diagnosis, monitoring & prognosis** of patients with neurodegenerative diseases, such as Alzheimer's, Parkinson's or Huntington's disease. Taking advantage of large collection of clinical and neuroimaging data, these innovations rely on statistical tools & Machine Learning algorithms to model the progression of these diseases. Such techniques are also designed to better select patients and assess treatment efficacy in clinical trials.

[JOB DESCRIPTION]

Years of research have led a cutting-edge framework for the estimation of neurodegenerative disease progression as shown on www.digital-brain.org and in "*Simulating Alzheimer's disease progression with personalized digital brain models*" [Koval et al, 2019]. These developments, gathered in the **Leaspy** Python package, have reached a broad audience - pharmaceutical companies, start-ups and laboratories - that is willing to benefit from it.

To this end, we are hiring various profiles to enhance the following topics :

- R&D of **new models & algorithms** of disease progression,
- Scientific research on large **neurodegenerative diseases cohorts**
- Leveraging the potential of these innovations into **real-life tools** used by practitioners

[PROFILE]

Interested in **major public health issues**, you also want to work at the interface of **mathematics, computer science & neurosciences**. You are problem solver and result-oriented, eager to **transfer** front-edge research to real-life applications that may change the way we treat patients with brain diseases. You have strong relational skills to communicate with scientists from various disciplines.

Typically a M.Sc or PhD graduate, you master some advanced topics in **Applied Maths** (Statistical Learning, Machine Learning, Deep Learning, ...) and **scientific development** (Python, Git, optimization as GPU or HPC). You know how to develop in a collaborative way. Front-end skills (web-dev, JavaScript) and scientific community management (forum, tutorials) are a plus.

But more, we are interested in any skills you might consider relevant to tackle these challenges. Do not worry, no medical record is needed – but you will learn a lot.

CNRS UMR 7225 – Inria Paris-Rocquencourt – Inserm U117 – University Pierre et Marie Curie UM 75



[TEAM]

The **ARAMIS lab** is ideally located at the **Brain and Spine Institute** (ICM), one of the major research institute for neurosciences in Europe. It is at the heart of the Pitié-Salpêtrière hospital, downtown Paris. The lab gathers researchers with background in applied mathematics and computer science, research engineers and clinical experts in the field of neurodegenerative diseases.

[STARTING DATE]

Between now (up to the administrative forms) and October.

[DURATION]

Depends on the contract. Typically from 1 to 3 years.

[REFERENCE]

- Aramis website : www.aramislab.fr
- Leaspy code : <https://gitlab.com/icm-institute/aramislab/leaspy/>
- Simulating Alzheimer's Disease Progression with Personalized Digital Brain model
https://hal.inria.fr/hal-01964821/file/SimulatingAlzheimer_low_resolution%20%281%29.pdf
- Website related to the previous paper : www.digital-brain.org

[SALARY]

Depending on experience

[APPLICATION & CONTACT]

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Join a CV & Motivation letter.

Home page:

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- www.igorkoval.com/