



Ludivine Morvan

Research scientist in machine learning

Thesis in machine learning / medical image processing and Biomedical and Health Engineer.

📍 Nantes, France (Permis B)

✉️ Ludivine.morvan@ls2n.fr

☎️ +33 (0)6 61 59 00 25

📄 <https://ludivinemv.github.io/>

EXPERIENCE PROFESSIONNELLE

2018-2021
(Nantes, France)

CRCINA - INSERM / Ls2n - Ecole Centrale de Nantes

PhD student / Teaching

- Collaboration with the nuclear medicine department of the hospital
- Processing of a multiple myeloma dataset (PET images and clinical)
- State of art and Design of survival models (RSF, Deep Learning etc.) with R and python (Tensorflow / Keras)
- Teaching in image processing, machine learning, control, python (engineering school)

2015-2019
(Nantes, France)

Anacours

Private tuition in mathematics

March-August 2018
(Nantes, France)

Ls2n - Ecole Centrale de Nantes

Research Internship

« Survival prediction by Random Survival Forest and PET imaging in the multiple myeloma context »

2016-2018
(Créteil, France)

CHU Henri Mondor

Research, innovation et development Project

« Improvement of an algorithm allowing patient-ventilator synchronisation »

Mai-August 2017
(Stockholm, Sweden)

Vironova AB

Imaging Internship

« Script creation to analyse elongated particles for improving the MiniTEM software »

July 2016
(Brest, France)

CHRU of Brest, Morvan hospital

Biomedical technician internship

« Study on the utilisation of the centrifuges and refrigerator parks ».

April-August 2015
(Brest, France)

CHRU of Brest, La Cavale Blanche hospital

Bacteriological technician (internship+ summer job)

« Identification by molecular biology and mass spectrometer of the *Lactobacillus* on bronchi of CF patients non colonized by *Pseudomonas aeruginosa* ». + Bacterial sowing operations

FORMATIONS

2018-2021
(Nantes, France)

Ecole Centrale de Nantes

PhD in information sciences, Imaging

"Computer-aided diagnosis in the multiple myeloma context"

2015-2018
(Créteil / Champs-sur-Marne, France)

ISBS engineering school - UPEC (ESIEE Paris)

Specialising in biomedical and health engineering

Specialities Imaging/informatics and biomaterial/biomechanics (First-class honours)

2013-2015
(Brest, France)

IUT Brest

DUT biological analysis

2012-2013
(Rennes, France)

CPGE - Chateaubriand High school

first year in BCPST - Biology, chemistry, physics, and earth sciences

PROGRAMMING

Python	■	■	■	■	■
Tensorflow/Keras	■	■	■	■	■
R	■	■	■	■	■
Matlab	■	■	■	■	■
C++, java, SQL	■	■	■	■	■
HTML/XML/CSS	■	■	■	■	■
Django	■	■	■	■	■
Latex	■	■	■	■	■

SOFTWARES

- ❖ Github / Gitlab, docker
- ❖ VS code, Spyder/Anaconda, Android Studio, Atome
- ❖ Slicer3D, ImageJ
- ❖ Excel, Orange, Ansys, Labview.

SKILLS

- ❖ Image analysis, synthesis, and processing
- ❖ Machine learning, Deep learning, data analysis etc.
- ❖ Optimisation, signal processing
- ❖ Basics and analytical techniques in medical biology and physics
- ❖ Biomechanics and biomaterial

LANGUAGES

French:	■	■	■	■	■
English:	■	■	■	■	■
Spanish:	■	■	■	■	■
Swedish:	■	■	■	■	■

Loisirs

- ❖ Voluntary work (in a shelter, academic support, food collection etc.)
- ❖ Associations (Alumni, ISPA, etc.)
- ❖ Personal projects (android application, websites, etc.)
- ❖ 2001- 2020: Dance (modern-jazz and street-jazz)
- ❖ Travels

Additional information

Some recent Personal Projects

- Still in progress **Application to learn a new language, Android Studio**
Android application to help to learn a language (Swedish at the beginning), dictionary of learn words and tests on these words. Classification of the words by theme, importance, degree of learning etc.
Acquired knowledge: Android studio, Java, HTML, CSS, XML, SQLite
- Still in progress **Personal website with tutorials**
HTML personal website containing pages with tutorials about different parts of what I learned in thesis as Survival analysis, deep learning and other machine learning methods, imaging etc.
Acquired knowledge: HTML, CSS, XML (<https://ludivinemv.github.io/>)
- 2020-Now **Alumni EPISEN – ISBS – IT responsible**
 - (still in progress) Web site creation where former students and students can log in to enter information about their jobs and internship, find information about other members and discuss, blog, job offers etc. (<https://bdaisbs.wixsite.com/alumni-episen>)
 - (February 2021) Former student's forum organisationAcquired knowledge: website creation, event organisation
- 2020 **COVID data extractor – Poitiers hospital**
Collaboration with Poitier hospital to help them in Covid-19 data extraction on governmental website to predict hospital saturation. Extraction with python on different website of statistical numbers by department and age: positive covid tests, reanimation occupation, other diseases data (Flu, diabetes, obesity, bronchitis etc.)
Acquired knowledge: selenium package, python

Publications

Peer Reviewed Journals

- IJCARS, 2020 Morvan, L., Carlier, T., Jamet, B. et al. Leveraging RSF and PET images for prognosis of multiple myeloma at diagnosis. International Journal of Computer Assisted Radiology and Surgery (IJCARS), 15, 129–139 (2020). <https://doi.org/10.1007/s11548-019-02015-y>
- EJNMML, 2020 Jamet, B., Morvan, L., Nanni, C. et al. Random survival forest to predict transplant-eligible newly diagnosed multiple myeloma outcome including FDG-PET radiomics: a combined analysis of two independent prospective European trials. European Journal of Nuclear Medicine and Molecular Imaging (2020). <https://doi.org/10.1007/s00259-020-05049-6>

Conference Proceedings

- PRIME (MICCAI), 2020 Morvan L. et al. Learned Deep Radiomics for Survival Analysis with Attention. Predictive Intelligence in Medicine. PRIME 2020. Lecture Notes in Computer Science, vol 12329. Springer, Cham. (2020) https://doi.org/10.1007/978-3-030-59354-4_4
- JFMN, 2019 Morvan, L., Carlier, T., Jamet, B. et al Prédiction de la progression chez des patients atteints de myélome multiple avec des Random Survival Forest. Médecine Nucléaire. Volume 43, Issue 2. Page 193 (2019) <https://doi.org/10.1016/j.mednuc.2019.01.061>