Florent FOREST
Data & Machine Learning Scientist | Postdoctoral Researcher
PhD in Computer Science | ISAE-Supaero Engineer (MSc)

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🎓 EDUCATION

Today 2021	**Postdoctoral Researcher, EPFL (ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE) , Lausanne, Switzerland** Developing data analysis and software tools for Innosuisse project "Worm-on-chip".
2021 2018	**PhD in Computer Science (Machine Learning), UNIVERSITÉ SORBONNE PARIS NORD, Paris area, France** PhD at LIPN lab (CNRS UMR 7030), A3 team (Machine learning). Worked on research projects around : ❯ Unsupervised learning (clustering, self-organized map models, visualization, deep learning) ❯ Big Data and distributed computing (map-reduce) ❯ Scalable machine learning algorithms ❯ Industry applications in aerospace on aircraft engine flight data (time series)
2017 2013	**Supaero Engineering Diploma (MSc), ISAE-SUPAERO ENGINEERING SCHOOL, Toulouse, France** Graduated in 2017. Specialization in **Data & Decision Sciences** and **Space Systems Engineering**

❯ Machine learning, Statistics ❯ Signal processing
❯ Data mining and visualization ❯ Applied mathematics & Numerical methods
❯ Databases (SQL/NoSQL), Big Data ❯ Physics, Continuum mechanics
❯ Reinforcement learning ❯ Aerodynamics, Flight & Space mechanics
❯ Optimization & Operations Research ❯ Languages
❯ Programming (C, Java, Python, R, Scala) ❯ Project management

Project works : industry group project with Liebherr Aerospace, Hackathons, MOOCs, Kaggle…

2016 2015	**Erasmus semester, TU BERLIN, Berlin, Germany** Master Luft- und Raumfahrttechnik (aerospace engineering).

❯ Satellite & Rocket architectures ❯ Fluid mechanics, Electronics
❯ Space Propulsion ❯ Project management (mission design)

2013 2011	**Preparatory classes, LYCÉE JANSON-DE-SAILLY, Paris, France** Preparation in Mathematics, Physics and Computer science for the top French engineering schools.
2011 2008	**Baccalauréat S, LYCÉE MARIE LAURENCIN, Mennecy, France** equiv. A-levels with highest honors.

💼 WORK EXPERIENCE

Today 2021	**Data Scientist & Software Engineer, NAGI BIOSCIENCE, Lausanne, Switzerland** Biotechnology start-up developing a novel organism-on-chip technology.
2021 2018	**Data Scientist, SAFRAN AIRCRAFT ENGINES, Paris area, France** Industry research contract. My role is to enable large-scale analytics of data generated by civil aircraft engines during flights, to develop scalable engine health monitoring algorithms, and apply research to industry use cases. ❯ Designed a generic Big Data processing pipeline for flight data analytics on the production cluster ❯ End-to-end implementation of health monitoring methodologies based on unsupervised learning ❯ Development and deployment of visualization apps ❯ Support engineers on distributed computing technologies `Data science` `Machine learning` `Aerospace` `Hadoop` `Hive` `Spark` `Scala` `Python` `MongoDB`
October 2017 April 2017	**Intern, AIRBUS — CENTRAL RESEARCH & TECHNOLOGY, Toulouse, France** I studied and applied various Artificial Intelligence methods to extract information from unstructured technical documents (text, images). ❯ Deep learning (computer vision, natural language processing), chatbot ❯ Design and development of a web application for data annotation and prediction ❯ Reading research articles `Deep learning` `Python` `Keras` `TensorFlow` `Rasa NLU` `HTML/CSS` `Javascript` `Polymer` `MongoDB` `API REST`

August 2016 March 2016	**Intern, CNES (French Space Center), Toulouse, France** Implementation and validation of a Manual Thrust mode in an AOCS (Attitude and Orbit Control System) simulator, in order to analyze end-of-life experiments on the CoRoT satellite (PROTEUS family). Space mechanics · Signal processing · Matlab · Simulink
June 2015 February 2015	**Intern, IRAP (Research Institute in Astrophysics and Planetology, Toulouse, France** Contributed to developing an open-source scientific library enabling astrophysicists to perform statistical analysis of gamma ray data measured by telescopes. Astrophysics · C++ · Python · Git
July 2014	**Intern, ONERA (French Aerospace Lab), Toulouse, France** Development of real-time software and deployment on Linux embedded systems. Embedded systems · C · Linux

🌐 Languages

French	●●●●●
German	●●●●●
English	●●●●●
Spanish	●●○○○
Chinese	●○○○○

▤ Skills

Programming	Scala, Python, C, C++, Web (HTML, CSS, Javascript)
Tools & Frameworks	Hadoop, Spark, Keras, PyTorch, scikit-learn, pandas
Databases	SQL, Hive, MongoDB
Collaborative & DevOps	Git, Docker, Artifactory/Nexus
OS	GNU/Linux, Windows

📖 Publications

🔗 florentfo.rest/publications

A Generic and Scalable Pipeline for Large-Scale Analytics of Continuous Aircraft Engine Data   2018
IEEE International Conference on Big Data 2018

Deep Embedded SOM : Joint Representation Learning and Self-Organization   2019
ESANN 2019 ○ github.com/FlorentF9/DESOM

Deep Architectures for Joint Clustering and Visualization with Self-Organizing Maps   2019
PAKDD 2019, Workshop on Learning Representations for Data Clustering

Large-scale Vibration Monitoring of Aircraft Engines from Operational Data using Self-organized Models   2020
Annual Conference of the PHM Society 2020

Selecting the Number of Clusters K with a Stability Trade-off : an Internal Validation Criterion.   2020
🔗 arxiv.org/abs/2006.08530   ○ github.com/FlorentF9/skstab

An Invariance-Guided Stability Criterion for Time Series Clustering Validation.   2021
International Conference on Pattern Recognition (ICPR) 2021

Computer environment system for monitoring aircraft engines   2020
FR Patent FR3089501 (extended worldwide)

❝ Referees

Dr. Jérôme Lacaille	Dr. Mustapha Lebbah
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