Florent Forest

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

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EDUCATION

2021 PhD in Computer Science (Machine Learning), UNIVERSITÉ SORBONNE PARIS NORD, Paris area, France

2018 PhD at LIPN lab (CNRS UMR 7030), A3 team (Machine learning). Research topics:

- > Unsupervised learning (clustering, deep learning, self-organizing map models, visualization...)
- > Scalable machine learning algorithms
- > Big Data processing and distributed computing (map-reduce)
- > Industry applications in aerospace on aircraft engine flight data (time series)

2017 Supaero Engineering Diploma (MSc), ISAE-SUPAERO, Toulouse, France

2013 Graduated in 2017. Specialization in Data & Decision Sciences and Space Systems Engineering

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

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

2016 Erasmus semester, TU BERLIN, Berlin, Germany

Master Luft- und Raumfahrttechnik (aerospace engineering). 2015

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

2013 Preparatory classes, Lycée Janson-de-Sailly, Paris, France

Preparation in Mathematics, Physics and Computer science for the top French engineering schools. 2011

2011 Baccalauréat S, Lycée Marie Laurencin, Mennecy, France

2008 equiv. A-levels with highest honors.

M Work Experience

Today April 2021

Postdoctoral Researcher, EPFL (ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE), Lausanne, Switzerland Building data analysis and software tools for Innosuisse project "Worm-on-chip" with Nagi Bioscience SA.

Data Scientist & Software Engineer, NAGI BIOSCIENCE, Lausanne, Switzerland

- > Built an end-to-end automated data analysis pipeline (AWS), increasing throughput and efficiency
- > Deep learning for microscope image analysis (object detection and segmentation)
- > Extracting relevant features from images and videos, collaborating with biologists
- > Front-end and back-end development, databases, APIs
- > Embedded software development for robotics/optics/fluidics control

Machine learning Cloud AWS PyTorch Spark Node.js Vue.js Electron Docker Python Javascript

March 2021 January 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 FyTorch Python MongoDB

October 2017

Intern, AIRBUS — CENTRAL RESEARCH & TECHNOLOGY, Toulouse, France

April 2017

I studied and applied various Artificial Intelligence methods to extract and query information from unstructured technical documents (scanned PDF, text, images) for cognitive assistant applications.

- > Deep learning (computer vision, natural language processing), chatbot
- > Design and development of a Polymer web application for data annotation and prediction
- > Reading research articles

Deep learning | Python | Keras | TensorFlow | SpaCy | Rasa NLU | HTML/CSS | Javascript | Polymer | MongoDB | 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

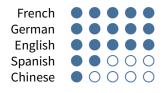
Intern, ONERA (FRENCH AEROSPACE LAB), Toulouse, France

Development of real-time software and deployment on Linux embedded systems.

Embedded systems | C | Linux |

ANGUAGES

SKILLS



Tools & Frameworks

Programming Scala, Python, R, Java, C, C++, Caml, Shell, Web (front-end/back-end) Hadoop, Spark, PyTorch, Keras, TensorFlow, scikit-learn, pandas...

Databases SQL, Hive, Athena, Postgres, MongoDB Collaborative & DevOps Git, CI/CD, Docker, Artifactory/Nexus

Cloud AWS (S3, EC2, SageMaker, Lambda, RDS, Athena, SFN...)

OS GNU/Linux, Windows

ML Applications Computer Vision, Natural Language Processing,

Time Series (sensor signals), Audio/Speech processing

Aerospace, Life sciences/Biotechnologies Industries



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

Annual Conference of the PHM Society 2020

SELECTING THE NUMBER OF CLUSTERS K WITH A STABILITY TRADE-OFF: AN INTERNAL VALIDATION CRITERION.

2020

2020

COMPUTER ENVIRONMENT SYSTEM FOR MONITORING AIRCRAFT ENGINES

AN INVARIANCE-GUIDED STABILITY CRITERION FOR TIME SERIES CLUSTERING VALIDATION.

2021

International Conference on Pattern Recognition (ICPR) 2021

DEEP EMBEDDED SELF-ORGANIZING MAPS FOR JOINT REPRESENTATION LEARNING AND TOPOLOGY-PRESERVING CLUSTERING. 2021

Neural Computing and Applications

2020

FR Patent FR3089501 / US Patent 17/299,249



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Dr. Mustapha Lebbah

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