



Dr. Abdelghafour HALIMI

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Senior Data Scientist | Image Processing Expert

Data science | Image processing | IA & Machine learning | Research

SUMMARY

A competent, highly motivated, and PhD qualified research associate in data science with 6 years' experience in machine learning, computer vision, and image processing. I am passionate about my work, and because I love what I do, I have a steady source of motivation that drives me to do my best. Proven ability in multi-cultural team-working environment. Highly intuitive and autonomous, in the face of a complex and/or unknown situation, I first seek to understand its causes and consequences to have a clear and logical vision, then act accordingly.

WORK EXPERIENCE

ATOS - Toulouse, France 01/2019 - PRESENT

Data Scientist | Image Processing Expert

Contribute my expertise to the Atos Research and Innovation department.

- Used Image processing and machine learning algorithms to analyze and solve complex business problems related to remote sensing.
- Built tools and docker images to automate processes such as radar interferometry or satellite data fusion processes.
- Proposed several use cases and proof of concepts on innovative topics related to image processing.
- Coached, developed, and motivated team members, providing coaching, and mentoring to junior data scientists and interns on image processing and machine learning techniques.

IRIT & Pierre Fabre – Toulouse, France 10/2014 – 04/2018

Research Assistant

- x Proposed and developed new fully automated and reliable machine learning techniques using statistical models for the characterization, classification and segmentation of skin lesions using confocal microscopy images.

INPT & ENSEEIHT – Toulouse, France 10/2014 - 09/2017

Teaching Assistant

- x Carry out teaching and supervision activities for engineers and master's students.
- Assisted teachers with classroom management and document coordination to maintain positive learning environment.

IRIT – Toulouse, France 03/2014 - 09/2014

Internship Student

- x Developed an unsupervised Bayesian clustering model to solve the problem of unmixing in hyperspectral imagery.
- Produced high-quality documents, spreadsheets, and presentations for internal and researcher-facing needs.

LTIR – Alger, Algeria 03/2013 - 08/2013

Internship Student

- x Developed a tool that enhances the PSs (Permanent Scatterers) using the DSs (Distributed Scatterers) in a SAR Radar Differential Interferometry Process.

LTIR – Alger, Algeria 03/2011 - 08/2011

Internship Student

- x Construction of a light follower robot.

EDUCATION

National Polytechnic Institute of Toulouse (INPT) - Toulouse, France

Ph.D – Signal, Image, Acoustics and Optimization.

10/2014 - 12/2017

Thesis Topic: Modeling and statistical processing of confocal microscopy images: application in dermatology.

Supervisors: Pr. Jean-Yves Tournet and Pr. Hadj Batatia

ENSEEIH- INPT - Toulouse, France

International Master – Signal and Image Processing

09/2013 - 09/2014

Thesis Topic: Non-parametric Bayesian Methods: Application to Hyperspectral Imaging

Supervisors: Pr. Jean-Yves Tournet and Pr. Nicolas Dobigeon

- Relevant Coursework: Satellite and Medical Imagery, IA, Machine learning, Statistics, Estimation, Classification, Inverse problems.
- Graduated with first class honors.

University of Science and Technology Houari Boumediene (USTHB) - Alger, Algeria

Master of Science – Telecommunication, Networks and Multimedia.

09/2011 - 08/2013

Bachelor of Science – Electrical Engineering.

09/2008 - 08/2011

- Graduated with Top honors.

PROFESSIONAL SKILLS

Technical skills:

- **Programming Languages:** Python, MATLAB, R, Mathematica, Maple.
- **Machine Learning & Data Science:** Tensorflow, Keras, Scikit-learn, SciPy, OpenCV, Scikit-image, Numpy, Pandas, Seaborn, PySpark.
- **Virtualization & DevOps:** VirtualBox, VMware, Docker, WSL2, MobaXterm, Gitlab, Putty.
- **Geospatial Image Analysis:** ENVI, Orfeo Toolbox, SNAP, QGIS.
- **Big Data & Databases:** PostgreSQL, HDFS/HIVE, SPARK.
- **Data Visualization:** Tableau, Spotfire.
- **Word Processing:** Microsoft Office, Latex, Adobe.
- **Operating System:** Windows, Linux MacOS.

Hard skills:

Data Analysis, Mathematics, Statistics, Data Visualization, Machine learning, Debugging, Programming, Modeling, Probability, Mentorship, Reporting.

Soft skills:

- **Problem-solving:** Innovation, Insight, Troubleshooting, Brainstorming, Experimenting, Agile.
- **Time-Management:** Managing appointments, Multitasking, Meeting deadlines, Planning.
- **Communication:** Presenting, Friendliness, Openness, Confidence, Cross-cultural.
- **Collaboration:** Teamwork, Listening, Respectfulness, Tolerance, Reliability, Trustworthiness.
- **Personal:** Adaptability, Perseverance, Patience, Responsibility, Consistency, Discipline, Autonomous, Sociable, Hard but smart work.

LANGUAGE COMPETENCIES

- Arabic: native language
- French: native language
- English: fluent

RESEARCH ACTIVITIES

- **Research interests:** Statistical Processing and modeling of Signal and Images, Inverse Problems, Data Science, Statistics, Classification, Regression, Clustering, Parametric Estimation, Remote sensing.
- **Tools and methods:** Machine Learning, Deep Learning, Bayesian Inference, Multiresolution Analysis, MCMC, Optimization algorithms, Neural Networks, SVM, CART, Random Forest, CNN, KNN, PCA.
- **Applications:** Hyperspectral Imaging, Confocal Microscopy Imaging, Radar SAR Imaging

SCIENTIFIC PUBLICATIONS

International journals and conferences: (in Biomedical Optics Express, IEEE-CAMSAP, EUSIPCO)

- A. Halimi, H. Batatia, J.L. Digabel, G. Josse and J.Y. Tournernet, "Statistical modeling of reflectance confocal microscopy images and characterization of skin lentigo" Biomedical Optics Express, 8, 5450-5467 (2017)
- A. Halimi, H. Batatia, J.L. Digabel, G. Josse and J.Y. Tournernet, "An unsupervised Bayesian approach for the joint reconstruction and classification of cutaneous reflectance confocal microscopy images" 25th European Signal Processing Conference (EUSIPCO), Kos island, Greece, pp.251-255, 2017.
- A. Halimi, H. Batatia, J.L. Digabel, G. Josse and J.Y. Tournernet, "Statistical modeling and classification of reflectance confocal microscopy images" Computational Advances in Multi-Sensor Adaptive Processing Conf. (CAMSAP), Curaçao, Dutch Antilles 2017.

CERTIFICATIONS

Skillsoft Certification: Research Topics in ML & DL Secure Implementation & Coding Cloud Basics	01/2020
Coursera Certification: Deep learning Specialization 80H	01/2019
Udemy & EDX Certification: Machine Learning 41H Deep learning 23H Python for Data Science 11H	02/2018
CIMI Certification: Machine Learning	07/2017

PARTNERSHIP

Academic (University of Toulouse - IRIT/INPT, France)

Jean-Yves Tournernet - Hadj Batatia - Nicolas Dobigeon- Lotfi Chaari.

Industrial

Jimmy Le Digabel and Gwendal Josse, Pierre Fabre Dermo-Cosmetique, France -- Hubert Lespinasse, ATOS, France

PROFESSIONAL MEMBERSHIPS

- IRIT laboratory, SC Group & TCI Group (2014 - 2018)
- French research group GDR-ISIS (Since 2014)
- IEEE Signal Processing Society (Since 2014)

AWARDS AND HONORS

- **ATOS:** SPOT Recognition for my work and presentation during the first Atos innovation week
- **PhD:** Scholarship fund with Campus France
- **International Master:** Head of the class
- **Bachelor:** Head of the class

INTERESTS

- Science, Video Games, Technology, Cinema, Kung Fu, Football, Travel