

# Maxime Bombrun, PhD

CEO & Senior Data Scientist

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<https://maxbombrun.github.io/>

## Experience

2023–Present **CEO and Senior Data Scientist**, *DataBron*, Stockholm, Sweden.

I am developing the overall vision and strategic direction my company while driving its growth and success. As such, I am working with international clients to provide data-driven solutions to their issues in analytic and modelisation.

2020–2023 **Lead Data Scientist**, *Data Team, Tradera*, Stockholm, Sweden.



I was leading the data science vision and roadmap for the e-commerce platform Tradera; while deploying machine learning solutions to improve circular consumption and sustainable shopping. Proficient in handling the whole data lifecycle from warehousing to deployment and conveying the outcomes intelligibly to boost the core business.

### Achievements:

- Implemented recommendation systems for personalised brands, search keywords, and sellers, and trending searches. Increased number of clicks on these features by, at least, 400%.
- Developed tags auto-completion by NLP approaches, dynamic auto-modeling for each attribute, 91 models in production.
- Completed two user safety projects on phishing monitoring and frauds detection based on five years of data, >5B observations.
- Designed four A/B tests and their statistical validations based on Bayesian hypothesis. At least 2% improvement on core metrics under 5% MDE.
- Promulgated data science within the company through three workshops and two lectures, one being at the G-Cloud Day.
- Defined and supervised two Master student projects, on the category tree architecture and deep learning implementation of product recommendations.

2018–2020 **Research Leader**, *Data Analytics Team, Forest Informatics, Scion*, Rotorua, New Zealand.



I was leading the Data Analytics Team comprised of three data/computer scientists, one bio-informatician and one biometrician, working across the forestry value chain to optimise its sustainability and the transition to a bio-circular world.

**Data Scientist**, *Data Analytics Team, Forest Informatics, Scion*, Rotorua, New Zealand.

- Designed a machine learning model to assess productivity across a large plantation forest.
- Improved and maintained a web platform for visualisation of large point-cloud data. I was then Project Leader on the internal deployment of this platform.
- Supported the statistical analysis of several business-oriented projects, including client reporting.

2015–2018 **PostDoc**, *Centre for Image Analysis and SciLifeLab, Uppsala Universitet*, Uppsala, Sweden.



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Principal Investigator: Prof. Carolina Wählby (Centre for Image Analysis and SciLifeLab)  
Large-Scale Data Analysis for Digital Image Analysis Applications

- Developed an open-source tool which combines the analysis of gene expression with quantification of cell and tissue morphology.
- Shaped a web platform for visualisation of large slide scanner images at different resolutions.
- Developed an image processing algorithm for nucleus and lipid droplet segmentation and feature extraction in high-content/high-throughput microscopy screening.
- Co-supervised two PhD students and led a team of five PhD students for CytoChallenge 2017.

2012–2015 **PhD Student**, *Université Blaise Pascal, Clermont-Ferrand*, France.



Supervisors: Prof. Andrew Harris (Laboratoire Magmas et Volcans (LMV)) and Prof. Vincent Barra (Laboratoire Informatique, Modélisation et Optimisation des Systèmes (LIMOS))  
Characterisation of Volcanic Emissions through Thermal Vision.

- Developed an image processing algorithm to segment and track high-speed particles, with 83,000 individual detected through 31 eruptions recorded at 200Hz with thermal camera.
- Designed a novel method to segment and parameterise volcanic plumes on thermal videos.
- Implemented an algorithm to detect multiple change points in 2D radiometer data.
- Investigated new processes to detect hot spots in satellite imagery.



## Teaching

- 2022 **Invited Speaker**, *G Cloud Day*, Stockholm, Sweden.  
A Journey through the Cloud at Tradera 1/2h
- 2019–2023 **Chairman of Forest Phenotyping Working Group**, *Internat. Plant Phenotyping Network*.  
Organising workshops and newsletters to present the latest insights of Forest Phenotyping to grow a community of experts from all over the world.
- 2018–2023 **Invited Lecturer**, *Center for Molecular Medicine*, Stockholm, Sweden.  
Teaching Master and PhD students: Bioimaging and Cell Analysis, CellProfiler (responsible for the content of lectures and tutorials) 4h/year
- 2017 **Invited Speaker**, *Advanced Methods in BioMedical Image Analysis*, Brno, Czech Republic.  
Summer School: Image Analysis in Biomedical Screening Application (lectures and tutorials) 4h
- 2016 **Invited Speaker**, *Congress of the Internat. Society for Advancement of Cytometry*, USA.  
Scientific tutorial: Configuring accurate cell detection in images using CellProfiler 4h
- 2015–2017 **Lecturer**, *Uppsala Universitet/Karolinska Institutet*, Uppsala/Stockholm, Sweden.  
Teaching Master and PhD students: Bioimaging and Cell Analysis, Image Analysis & Processing, CellProfiler (responsible for the content of lectures and tutorials) 34h/year
- 2013–2015 **Teaching Assistant**, *Université Blaise Pascal*, Clermont-Ferrand, France.  
Teaching Master students in engineering school: Data Structure (lectures and tutorials) 56h/year

## Education & Diplomas

- 2012–2015 **Doctorate**, *LMV/LIMOS, Université Blaise Pascal*.  
Characterisation of Volcanic Emissions through Thermal Vision
- 2011–2012 **Master's Degree**, *Université Blaise Pascal, Master's Degree in Image Processing*.
- 2009–2012 **Master's Degree**, *Institut Supérieur d'Informatique, de Modélisation et de leurs Applications (ISIMA), Master's Degree in Engineering (i.e., Diplôme d'ingénieur), specialising in Computation and Scientific Modelling (Applied Mathematics)*.

## Languages

- French** Native speaker
- English** Fluent, working language *IELTS(2018), score 6.5/9; TOEFL(2015), score 103/120*
- Swedish** Competent

## Key Skills

- Image Science** Geo- and Bio-Image Analysis, Infrared Imaging, Giga-pixel Images, Segmentation, Pattern Recognition & Tracking, Remote Sensing, GIS, Visualisation
- Data Analysis** **Machine & Deep Learning**, Regression, Classification, Clustering, Dimensionality Reduction, Big Data, Distributed Computing, **SQL/sqlite/MongoDB, Git**
- Computer Science** C/C++/CImg, **Python**/OpenCV/TensorFlow, Java/ImageJ/Fiji, **R**, Matlab, Objective-C, JavaScript, PHP, Parallel Computing, **Kubernetes, Airflow**, Unix/Windows/Mac
- Operations Research** Graph theory, Linear programming, Optimization, Metaheuristic

## References

- Prof. Vincent Barra
- Dr. Sylvain Costes
- Prof. Andrew Harris
- Prof. Carolina Wählby
- Dr. Alan Tan

H-index: 10 – List of publications available on request

## Journal Reviewer

- Geology** Geochemistry, Geophysics, Geosystems  
Journal of Geophysical Research
- Biology** Medical Image Analysis  
Transactions on Medical Imaging
- Informatics** Scientific Reports - Nature  
ISBI 2018