

## Mehdi Bahri *Research & Development Data Scientist*

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### Research interests

Bayesian Learning, Compressed Sensing, Component Analysis, Manifold Learning, Network Analysis, Deep Learning

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### Education

Imperial College London

LONDON, UNITED KINGDOM

**MSc. Advanced Computing - Distinction (84%)**

2015 – 2016

Data Science • Machine Learning • Optimisation • Bayesian Learning

**Thesis:** Robust Low-Rank modeling on Tensors: New Algorithms and Extensive Comparisons

*Awarded the Winton Capital Computing MSc Project Prize (rank 1/188 students)*

Grenoble INP - Ensimag

GRENOBLE, FRANCE

**Dipl. Ingénieur. Applied Mathematics and Computer Science - with High Honours (76%)**

2013 – 2016

Statistics • Bayesian Learning • Data Mining • Operations Research • Algorithms • Numerical Analysis • Numerical Optimisation • Software Engineering • Databases • Concurrent Programming

*Mathematical modeling, Graphics, Vision, and Simulation track. Focus: statistics, applied mathematics*

Lycée Chateaubriand

RENNES, FRANCE

**Classes Préparatoires aux Grandes Écoles (Preparatory Program) PC\***

2010 – 2013

Two-year intensive training coursework in advanced mathematics, physics, and chemistry

Leading to the nationwide competitive entrance examinations to the French Grandes Écoles for scientific studies

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### Research and Professional Experience

Speechmatics - Speech Recognition Engineer

LONDON, UNITED KINGDOM

**Research & Development internship**

04/17 - 07/17

- Recurrent Neural Networks (GRU, LSTM, vanilla) for language modelling on millions of words
- Improving the existing code-base by moving to TensorFlow and reading research papers
- Experimented with new architectures to reduce the model size by a factor of 4 for the same perplexity
- Technological stack: Python (TensorFlow), C++

HarperCollins Publishers - Data Scientist

LONDON, UNITED KINGDOM

**Research & Development - Global Pricing and Analytics**

09/16 - 03/17

- In charge of modeling book sales through network analysis and graph mining on hundreds of GB of data
- Predicting the ranking of e-books in terms of impact on the catalogue when put on sale
- Reading research from related fields (social network analysis, bio-informatics, etc.)
- Investigation of volume propagation in the network, and inference of structure from attributes
- Technological stack: Python (scikit-learn, networkx) + MongoDB

Imperial College London - Master's Thesis

LONDON, UNITED KINGDOM

**Robust Low-Rank modeling on Tensors: New Algorithms and Extensive Comparisons**

04/16 - 09/16

- Designed 4 efficient ADMM algorithms for simultaneous learning of structured dictionaries and (sparse and dense) representations
- Ran benchmarks against 11 competing algorithms on 5 computer vision experiments; showed my methods consistently match or outperform the state of the art in terms of MSE and FSIM
- Proposed a Bayesian treatment based on sparse Bayesian learning and Variational Inference
- Maintained low-order polynomial complexity, discussed ways of scaling through distributed computing
- Efficient implementation: MATLAB, C, BLAS/LAPACK, OpenMP

**Papers accepted at ICCV 2017 and EUSIPCO 2017, journal version in preparation (PAMI, IJCV)**

*Supervisors: Dr Stefanos Zafeiriou & Dr Yannis Panagakis.*

**Morgan Stanley - Technology Summer Analyst**

LONDON, UNITED KINGDOM

**Software Engineering - Technology & Data department**

06/15 - 09/15

- In charge of designing and testing a prototype for a trade control system
- Devised a client - server architecture; full-stack development (Java, Javascript)
- Worked with legacy code, wrote extensive documentation, git flow

Presented at the global meeting of the sub-department. Project continued for integration into production.

**CEA Grenoble & Ensimag - Specialism project**

GRENOBLE, FRANCE

**Prediction of the nature of missing values in quantitative proteomics**

06/15

- Research project on unsupervised learning in a team of three
- Supervised by a statistician from the French Alternative Energies and Atomic Energy Commission (CEA)

**TIMC-IMAG & Ensimag - Independent Study Option**

GRENOBLE, FRANCE

**Probabilistic inference and modeling of over-diagnosis**

01/15 - 05/15

- Joint laboratory with the University of Grenoble's Faculty of Medicine
- Bayesian Modeling of over-diagnosis in a population of patients
- Hybrid MCMC-EM algorithms for inference (R implementation)

Presented results to a committee of researchers. Earned second best mark of the cohort.

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**Awards and scholarships**

2016	Winton Capital Computing MSc Project Prize (£1200)- <i>Best MSc thesis in the Department of Computing</i>
2016	Pump it Up: Data Mining the Water Table <i>DrivenData Competition</i> - top 7%
2015	Explo'ra Sup grant for studying at Imperial College London (3000€, French government)
2013	First prize at the HackMyCity Hackathon in Grenoble

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**Publications**

- **M. Bahri**, Y. Panagakis, and S. Zafeiriou, "Robust Kronecker-Decomposable Component Analysis for Low Rank Modeling" ICCV 2017, *accepted for publication*, Jul. 2017
- N. Xue, G. Papamakarios, **M. Bahri**, Y. Panagakis, and S. Zafeiriou, "Robust Low-rank Tensor Modelling Using Tucker and CP Decomposition" in 25th European Signal Processing Conference (EUSIPCO 2017), special session on Component Analysis for Computer Vision, *accepted for publication*, 2017

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**Skills**

	Computing skills	Languages
Programming ( <i>advanced</i> )	Python, Java, C, Shell	French <i>Native</i>
Programming ( <i>intermediate</i> )	SQL, Javascript, Prolog, C++	English <i>Fluent</i>
Modeling	MATLAB, R, NumPy/SciPy, Mathematica, TensorFlow	Spanish <i>Intermediate</i>
Tools	Git, L <sup>A</sup> T <sub>E</sub> X, MongoDB	

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**Community Service and Leadership**

2013 - 2015	Elected student representative <i>Ensimag's Education and Student Life Committee</i>
2014 - 2015	Member of the administration board <i>Ensimag's Students' Union</i>
2014 - 2015	Member of the administration board <i>Ensimag's Junior-Enterprise (Nsigma)</i>
2014 - 2015	Morgan Stanley Campus Ambassador <i>Ensimag</i>