

# Mehdi Bahri *PhD Student in Machine Learning*

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## Education

Imperial College London	LONDON, UNITED KINGDOM
<b>PhD. Machine Learning</b> Geometric Deep Learning & Generative Models on Graphs and Manifolds. <i>Supervisors: Dr. Stefanos Zafeiriou &amp; Prof. Michael Bronstein.</i>	2017 – (2021)
<b>MSc. Advanced Computing - Distinction (84%)</b> Focus on statistical machine learning. <b>Thesis:</b> Robust Low-Rank modeling on Tensors: New Algorithms and Extensive Comparisons. <i>Awarded the Winton Capital Advanced Computing MSc Project Prize.</i>	2015 – 2016
Grenoble INP - Ensimag	GRENOBLE, FRANCE
<b>BSc. and MSc. Applied Mathematics and Computer Science - with High Honours</b> Focus on statistics, numerical optimization, numerical analysis, databases, software engineering.	2013 – 2016
Lycée Chateaubriand	RENNES, FRANCE
<b>Classes Préparatoires aux Grandes Écoles PC*</b> Intensive training in mathematics, physics, and chemistry for the nationwide competitive examinations.	2010 – 2013

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## Publications

- **M. Bahri**, Y. Panagakis, and S. Zafeiriou, "Robust Kronecker Component Analysis" *IEEE TPAMI, Special Issue on Compact and Efficient Feature Representation and Learning in Computer Vision*, 2018 (accepted for publication) ([arXiv:1801.06432](https://arxiv.org/abs/1801.06432))
  - **M. Bahri**, Y. Panagakis, and S. Zafeiriou, "Robust Kronecker-Decomposable Component Analysis for Low Rank Modeling" in International Conference on Computer Vision (ICCV) 2017
  - N. Xue, G. Papamakarios, **M. Bahri**, Y. Panagakis, and S. Zafeiriou, "Robust Low-rank Tensor Modelling Using Tucker and CP Decomposition" in European Signal Processing Conference (EUSIPCO) 2017
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## Professional Experience and Selected Projects

Google AI - Research Intern	NEW YORK, NY
<b>Machine Intelligence &amp; Machine Perception</b> <ul style="list-style-type: none"><li>• Robust generative models for meshes, pooling on meshes</li><li>• Implementation in TensorFlow, Python, C++</li></ul>	10/18 - 01/19
JPMorgan Chase & Co - Quantitative Associate Intern	LONDON, UNITED KINGDOM
<b>Equities Systematic Trading QR</b> <ul style="list-style-type: none"><li>• Quantitative Research Off-Cycle Internship in Machine Learning</li><li>• Time series forecasting and volatility modeling for automated trading of single stocks options</li></ul>	06/18 - 08/18
Speechmatics (Cantab Research Ltd.) - Speech Recognition Intern	CAMBRIDGE, UNITED KINGDOM
<b>Research &amp; Development</b> <ul style="list-style-type: none"><li>• Improved the RNN language models by implementing research papers in TensorFlow and C++</li><li>• Divided model size by 4 while keeping the same cross-entropy loss / perplexity and WER</li></ul>	04/17 - 07/17
HarperCollins Publishers - Data Scientist	LONDON, UNITED KINGDOM
<b>Global Pricing and Analytics</b> <ul style="list-style-type: none"><li>• Graph mining and influence maximization to maximize uplift of books on special offers</li><li>• Analyzed MongoDB databases of more than 100Gb with scikit-learn and networkx</li></ul>	09/16 - 03/17
Imperial College London - Master's Thesis	LONDON, UNITED KINGDOM
<b>Robust Low-Rank Modeling on Tensors: New Algorithms and Extensive Comparisons</b> <ul style="list-style-type: none"><li>• Devised 4 ADMM solvers and a Variational Bayes algorithm for robust tensor factorizations (MATLAB)</li><li>• Compared against 11 state-of-the-art methods on computer vision benchmarks</li><li>• Analyzed 500Gb of experimental data, showed improvements of up to 16% higher PSNR and FSIM</li><li>• Published in top venue</li></ul> <i>Supervisors: Dr Stefanos Zafeiriou &amp; Dr Yannis Panagakis.</i>	04/16 - 09/16

**Morgan Stanley - Summer Analyst (Tech & Data)**

LONDON, UNITED KINGDOM

**Full-stack development of a trade control system prototype**

06/15 - 09/15

- Software engineering (Java, Javascript, git flow, legacy code, tests, architecture design)
- 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**

2019	IPAM Workshop II and IV travel grant (UCLA)
2018	Google Computer Vision Summit <i>fully-funded invitation to Google Zürich &amp; poster presentation</i>
2017	Full PhD Scholarship from the Department of Computing
2016	Winton Capital Advanced Computing MSc Project Prize (£1200) <i>best thesis in Computer Science (1/188 students)</i>
2016	Pump it Up: Data Mining the Water Table (DrivenData Competition) <i>top 7%</i>
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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**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, TensorFlow, Scikit-learn, Pytorch	Spanish <i>Intermediate</i>
Tools	Git, L <sup>A</sup> T <sub>E</sub> X, MongoDB	

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**Teaching Activities**
**Tutorial support**

2019	Teaching Assistant for CO460 - <i>Deep Learning</i>
2018	Teaching Assistant for CO495 - <i>Advanced Statistical Machine Learning</i>
2018	Teaching Assistant for CO493 - <i>Data Analysis and Probabilistic Inference</i>

**Student co-supervision**

2018	MSc, Shunwang Gong (Independent Study Option and MSc thesis) <i>Geometric Deep Learning</i> with Dr Stefanos Zafeiriou ( <i>Distinguished Project Award</i> )
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**Community Service and Leadership**
**As a PhD student**

2019	KCL/UCL Junior Geometry Seminar (Invited Speaker: <i>Geometric Deep Learning</i> )
2017 - current	Member of the ACM Student Chapter <i>Imperial College London</i>
2017	Presented poster at the <i>Official Launch of the Machine Learning Initiative</i> at Imperial College London

**As an undergraduate**

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>

**Professional bodies**

Student Member of the IEEE and of the Computer Society. Member of the Computer Vision Foundation (CVF).

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## **Interests**

Fitness & Nutrition • Cycling

REFERENCES AVAILABLE UPON REQUEST.