Mohammed Belhal **Karimi**

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Education

Ecole Polytechnique, CMAP *Paris, France*
PHD IN MACHINE LEARNING *Oct. 2016 - Sept. 2019*

- Nonconvex Optimization for Machine Learning: Algorithms, Analysis and Applications
- Under the supervision of Marc Lavielle and Eric Moulines

MINES ParisTech, PSL *Paris, FR*
MASTER OF SCIENCE *Sept. 2015 - June 2016*

- Main topics: Machine Learning, Computer vision, Optimization, Cognitive sciences

CentraleSupelec, Supelec track *Paris, France*
ENG. DEGREE *Sept. 2011 - June 2015*

- Semester at ESCP Europe: Master in Management. London Campus
- 3rd year at Telecom ParisTech, Master IREN: Economics and Innovation

Skills

Programming Python (TF, Keras, Scikit-Learn), R (Package saemix), Stan, Matlab, SQL, LaTeX, Django, Javascript, HTML5, CSS
Languages French: native, English: fluent, Spanish: advanced, Persian: native

Experience

Samsung AI - HSE Lab *Moscow, RU*
VISITING SCHOLAR *Jul. 2019 - Sept. 2019*

- Bayesian Deep Learning: optimization and design
- Working with Dr. Dmitry Vetrov and Dr. Dmitry Kropotov

Freelance consultant *Paris, FR*
DEEP LEARNING CONSULTANT *Sept. 2017 - Present*

- Popsy (classifieds): Category and Price prediction based on listing images (using a multi-output multi-class VGGNet)
- OuiCar (P2P car sharing): Damages detection on car pictures (using a Mask R-CNN)

Bill & Melinda Gates Foundation *Boston, USA*
DATA SCIENTIST *Feb. 2016 - Apr. 2016*

- Applying Bayesian Statistics to enable domain experts that lack statistical expertise to perform qualitative model checking and encode simple forms of qualitative prior knowledge
- Automation of "data sketches" that can quickly identify common-sense relationships between variables

Massachusetts Institute of Technology, MIT *Boston, USA*
RESEARCH SCIENTIST *Jan. 2016 - Jul. 2016*

- Machine Learning research, Brain and Cognitive Sciences department, ProbComp Lab. Working on MCMC methods and diagnostic tools. Under the supervision of Vikash Mansinghka.

Avolta Partners *Paris, FR*
M&A ANALYST *Mar. 2015 - Sep. 2015*

- Writing of Information Memorandum and Business Plan for high-tech startups (A and B series)
- Analysis on fundraising data in France (Time-to-next series, average first series amount, etc.)

Rocket Internet *Paris, FR*
GLOBAL VENTURE DEVELOPER *Feb. 2014 - Aug. 2014*

- Launching Lamudi/Carmudi in 20+ African countries
- Expansion team, helping Business Intelligence team with performance reports

eKomi - the Feedback Company *Berlin, DE*
BUSINESS INTELLIGENCE *Jul. 2013 - Feb. 2014*

- Business Intelligence (metrics by country, season, segment)
- Improvement of internal processes (Sales planning, Workflow, Business and Market Intelligence)

Extracurricular Activity

Entrepreneurship   Agora: Detecting flaws at scale on images. `http://get-agora.com/`
Sports   Surf, Skateboard, Basket-ball, Soccer
Fun   Fashion (needlepoint), Music production (Maschine), Reading (Sociology)

Research Articles

On the Global Convergence of Fast Incremental EM Methods

B. Karimi, Hoi-To Wai, Marc Lavielle and E. Moulines

• Accepted at NeurIPS 2019

A Doubly Stochastic Surrogate Optimization Scheme for Non-convex problems

B. Karimi, Hoi-To Wai and E. Moulines

• Work in Progress

Non-asymptotic Analysis of Biased Stochastic Approximation Scheme

B. Karimi, Hoi-To Wai, B. Miasojedow and E. Moulines

• Conference On Learning Theory (COLT), Phoenix, USA, 2019

Efficient Metropolis-Hastings sampling for nonlinear mixed effects models

B. Karimi and M. Lavielle

• To be published in Springer Series Statistics and Data Science: new challenges, new generations

A fast Stochastic Approximation of the EM for nonlinear mixed effects models

B. Karimi, M. Lavielle and E. Moulines

• Computational Statistics and Data Analysis, Volume 141, January 2020, Pages 123-138

On the Convergence Properties of the Mini-Batch EM and MCEM Algorithms

B. Karimi, M. Lavielle and E. Moulines

• pre-print

Non linear Mixed Effects Models: Bridging the gap between Independent Metropolis Hastings and Variational Inference

B. Karimi, M. Lavielle and E. Moulines

• ICML 2017 Implicit Models Workshop

Talks and Posters

An Incremental and An Online Point of View of Nonconvex Optimization

Samsung AI Center (Moscow, Russia)

MISSO Scheme

NeurIPS 2018: Bayesian Deep Learning Workshop (Montreal, Canada)

Some Accelerations of MLE Algorithms

COMPSTATS 2018 (Iasi, Romania)

Fast MCMC algorithm for nonlinear mixed effects models

Bayesian Young Statisticians Meeting (Coventry, UK)

Inference in mixed effects models

Facebook HQ (Paris, France)

HBGDki studies with BayesDB (Poster)

McGovern Institute (Boston, USA)

Awards

2019	**Jacques Hadamard Researcher Grant**, Samsung AI - HSE Lab visiting scholar grant	*Moscow, RU*
2019	**Student travel award**, COLT Conference	*Phoenix, USA*
2018	**Young researcher travel award**, BAYSM Conference	*Warwick, UK*
2017	**Jacob Startup Competition**, Agora Pitch, 4th place	*Bremen, DE*

Teaching

2017-2018	**MAP534: Machine Learning**, Msc Polytechnique-HEC	*Palaiseau, FR*
2017-2018	**MAP535: Regression**, Msc Polytechnique-HEC	*Palaiseau, FR*
2017-2018	**Bayesian Statistics**, Msc Data Science Ecole Polytechnique	*Paris, FR*
2018	**Innovation & Technology**, 3A Ecole Polytechnique	*Palaiseau, FR*