Abdallah Bari – Résumé
5 Park Place Apt 10, Montréal, H3Z 2K4, Canada, Tel.: (514) 715-9097 - Email: abdallah.bari@gmail.com

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Qualifications

Long experience developing methodologies and tools involving machine learning and artificial intelligence, the results of which have been considered as breakthroughs. Pioneered some early ML work with fractal geometry for accurate object identification. These ML/AI-based tools/methodologies not only helped in the rapid assessment of subtle variation (in images) but also shortened the time of discovery and delivery of results/products with higher accuracy when compared to heuristic approaches. These results are currently used in R&D and industries spanning agriculture (genetics), environment (climate change) and transportation (safety). Led international collaborative research projects involving multidisciplinary teams with colleagues from different institutions/universities and from different countries (Horizon 2020) leading to results that attracted the attention of both public and private sectors. Long experience in the development of appropriate and tailored math-based computer applications, some of which have been translated from English into French and used in international projects such as the United Nations Global Environment Facility (GEF) projects.
Published original articles in highly ranked journals and books with renowned publishes, such as Taylor and Francis Group. Published several books highlighting the immense potential of mathematics to better leverage Big Data, ML and AI. Developed and delivered a new course on Big Data for Harvard Innovation Lab (USA), which went live early 2018. Long experience in managing large datasets and applying machine learning techniques and algorithms to real-world problems in the cloud and the edges, such as genetic algorithms (GA) ad artificial neural networks using Hadoop and Spark with R programming language as well as deep learning frameworks (MxNet and Keras). Multilingual with excellent interpersonal skills and ability to work in a multi-cultural and multi-ethnic environment. Organised excellent international conferences, workshops and published their proceedings and organised their satellite social events related to art and archaeology.

Experience

2019 – Present: Science Director: Ossicles Technologies Inc – NextAI Canada, Montréal.

- Developing embedded AI to assess the performance and health in horse equestrian sports. The project has been selected among the 10 top 2019 innovations in Québec. https://www.quebecscience.qc.ca/inventions-de-lannee/inventions-2019/10-inventions-qui-decoiffent/.

2018 – Present: Researcher - Founder: Operational AI - OperAI

- Co-designed and developed ML/AI based solutions and prototypes including development of cloud architecture of applications at the edges. Elaborated IoT prototypes and applications with AI that are now in production phase. Expanded on partnership with industry in the context of manufacturing intelligence (industry 4.0).

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2019 – Present: Artificial Intelligence Chief Officer - Important Safety Technologies

- Prototyping and development of P2V (Pedestrian to Vehicle) AI-based solutions and applications for pedestrian safety. The envisaged solution is composed of 3 parts involving preparation of big data (ETL / Big Data), MA / IA and the Cloud. The solution developed is now in the production phase with applications planned for spring 2020. Currently working on the preparation of new standards within the framework of this P2V project with the automotive industry (Canada / United States / Europe) and international transport authorities.

2016 – Present: Researcher - Founder: Math Coding and Analytics (MCA)

- Coordinated a global math-based new research initiative the results of which were accepted to be presented in France (May 2017).
- Published several Big Data/ML and AI related books, which have been highly rated (see publications)

2010 – 2016: Senior Scientist - Consultative Group for International Agricultural Research (CGIAR)

- Led international collaborative research with results considered as breakthroughs.
- Led globally new climate change and biodiversity related initiatives.
- Established a successful global platform/network to search for climate change related traits in plants.
- Led one of the work packages of European Horizon 2020 proposal.

2008-2009: Founder E-Data Insights Toronto

- Launched E-Data Insights Business addressing massive e-data and its complexity.
- Participated in various business events including the Americas Economic Forum (Montreal 2009).
- Carried out the Computer-Ordering Analyst work at Loblaw Food Company.
- Participated in international applied mathematical events organised by Field Institute of Mathematical Research (Toronto Canada).

1998-2008 Science Analyst - Biodiversity international

- Developed math-based innovative methodologies to capture, assess, and monitor biodiversity. Some of these methodologies have been considered for use by international research & development projects.
- Initiated and investigated the role of plant's functional traits and their variation in mitigating climate change (water scarcity, heat and drought).
- Developed, implemented/administrated projects/grants & strategies/policies addressing biodiversity/water issues in the context of climate change (ecosystem degradation/water scarcity) and development pressures.
- Elaborated on the conceptual/Mathematical theoretical framework aspects of designing & monitoring biodiversity.
- Initiated and developed research activities towards the development of indicators for the 2010 target to reduce the loss of biodiversity.

- Published and reviewed scientific manuscripts, chapters and news information at the international level (Complexity/Nature forums, Cambridge Journal, Water/Food Prog., World Bank new IAASTD initiative).

1993-1997 Data, Information and Training Officer - International Plant Genetic Resource (IPGRI)

- Led and developed management information systems based on conceptual modelling approach involving people in a number of countries, the approach has been taken up by the Global Environment Facility (UNDP-GEF) projects.
- Initiated and implemented the first agreement between the Environmental Systems Research Institute (ESRI) and IPGRI/CGIAR to use ESRI products (ArcGIS) across CGIAR Offices to analyse survey/inventory data.
- Supervised the development of applications for managing data/information including national capacity development.
- Organised and conducted international training / capacity development along with the design and establishment of new facilities (Gene banks) in several countries.
- Organised and conducted international events including conferences and workshops along with their social and cultural satellite events (music, archelogy and history).

1988-1992 Plant surveyor - International Board for Plant Genetic Resources (FAO)

- Organised and led several field expeditions to survey plant diversity in Africa, Asia and Europe.
- Produced a bulletin for Europe and North Africa to report on biodiversity issues.

1986-1988 Trade and Management Officer National Seed Company (Morocco)

- Supervised the selling of plant seeds across the country that includes seeds provision and dispatching to nearly 450 points of sale.
- Conceived the optimisation of the dispatching process and helped in thrive of the company.

1983-1985 Plant genetic improvement researcher National Agricultural Research Institute (INRA)

- Initiated a new program of plant improvement that has led to the registration of new varieties (oat).
- Participated in the elaboration of INRA-Morocco's first research Master Plan (Plan Directeur de la Recherche Agronomique) with International Service for National Agricultural Research (ISNAR).

Education

- PhD on imaging techniques to describe, assess and monitor biodiversity, 2005 Genetic Department, University of Cordoba, Spain

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- Ingenieur d'Etat (MSc) in genetic improvement (gene transfer), 1983, Institute of Agronomy & Veterinary Medicine, Morocco and University of Minnesota, Minneapolis-St Paul, USA

Membership/Working Groups/Professional Associations

- Data Management International - DAMA International
- International Association of Science and Technology for Development (IASTED – Canada)
- Institute of Electrical and Electronics Engineers (IEEE)

Applications/Math based Tools

- GRIS (Genetic Resources Information System) is a software application developed as a generic application based on conceptual modelling approach for managing genetic resources. It is developed and conceived to be tailored depending on (the needs and the requirements of users in a number of countries that include countries, translated into French and Russian and used in several countries and projects. It has its own set of documents including e-distance learning documents.
- SIPALM (Information system of palm tree) is an application based on GRIS approach to carry out remote assessment/surveying of biodiversity using IT.
- FIGS (Focused Identification of Germplasm Strategy) – R language platform

Volunteer and community work

- Team leader of needs assessment survey for the homeless, Municipality of Toronto, Toronto ON, 2009
- Organised African Music Days involving Artists from New York, USA (1995)
- Decorated the municipality during the national day as artist while student (1977)

Presentations (most recent) related to programming platforms, AI (ML) and Big Data.

- 2016 - Use R! Conference Capturing and understanding patterns in plant genetic resources data to help develop "climate-proof" crops - R platform. The R User Conference 2016, June 27 - June 30 201, Stanford University, Stanford, California, USA. http://user2016.r-project.org//.
- 2017 - 'Crop Diversification in a Changing World' symposium: Machine-learning approaches to accelerate the utilization of plant genetic resources. 'Crop diversification in a changing world: Mobilizing the green gold of plant genetic resources', Montpelier 8–11 May 2017, France. - https://symposium.inra.fr/eucarpiageneticresources2017/.
- 2018 - 'Agri-Analytics Days' conference: Digital Approaches to Develop Rapidly and Timely Portfolio of Crop Varieties. AgriAnalytics Days, Université Mohammed VI Polytechnique, Benguerir/Marrakech 8-9 May 2018, Morocco - http://www.agrimaroc.ma/bengrir-big-data/

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Publications (recent)

- A. Bari (2018) Edge & Fog Analytics: The New Analytics Interface https://www.amazon.ca/Edge-Fog-Analytics-New-Interface/dp/1723874108/
- A. Bari (2018) Enjeux & Défis du Big Data: Défis Épistémologiques des Mégadonnées. https://www.amazon.com/Enjeux-Défis-Big-DataÉpistémologiques/dp/1983383058/
- A. Bari (2018) Machine Learning at Work: Speeding Data Discovery. https://www.amazon.com/dp/B07BRYQWPL/. A. Bari (2017)
- Working with of Big Data: Scaling Data Discovery. ISBN-10: 1973573954 https://www.amazon.com/dp/1973573954. A. Bari (2017) Subtle Challenges of Big Data: Diving into Big Data Epistemic Challenges. ISBN-10: 1521580928 https://www.amazon.com/dp/1521580928.
- A. Bari, A.B. Damania, M. Mackay and S. Dayanandan (Eds.) (2016). Applied Mathematics and Omics to Assess Crop Genetic Resources for Climate Change Adaptive Traits. CRC Press, Taylor & Francis Group, Boca Raton, FL, USA. ISBN 9781498730136. www.routledge.com/products/9781498730136
- A. Bari, H. Khazaei, F.L. Stoddard, M.J. Sillanpää, Y.P. Chaubey, S. Dayanandan, D.F. Endresen, E. De Pauw, A.B. Damania (2016). *In silico* evaluation of plant genetic resources to search for traits for adaptation to climate change. *Climatic Change 134(4)*: 667-680. dx.doi.org/10.1007/s10584-015-1541-9

Readers' comments on some of the books by readers:

Fantastic book, Big Data of Things! February 21, 2018 - Format: Kindle Edition
Amazing book, goes from overview to details for most aspects of Big Data if not all, if you are a beginner to Data Sci, AI, Machine Learning, this book will help. Some content are mathematical, programming or scripting experience could enlighten you better. Overall time well spent, highly recommend it.
https://www.amazon.com/gp/product/B0786QHJL7/ref=dbs_a_def_rwt_bibl_vppi_i0#customerReviews

Excellent book! October 2, 2018 - Published on Amazon.com
Excellent book, didactic, concise with a global view of the ML universe. I'm using it, with others, to prepare my introductory ML course. I also strongly recommend reading for executives who wish to have a comprehensive, well-written, concise overview of ML. https://www.amazon.com/Machine-Learning-Work-Speeding-Discoveryebook/dp/B07BRYQWPL/ref=tmm_kin_swatch_0?_encoding=UTF8&qid=1539951499&sr=1-3#customerReviews

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More publications can also be made available.
