Abdoul Jalil Djiberou Mahamadou
AI Research Scientist

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Experience

Postdoctoral Fellow   Stanford University and GSK.ai – USA   **June 2023 – Present**
Advisors: Dr. Russ Altman, Dr. Mildred Cho, and Dr. David Magnus
Investigating the ethical, legal, and societal implications of using AI in drug discovery and development.

Postdoctoral Fellow   Simon Fraser University – Canada   **Aug. 2022 – May 2023**
Advisors: Dr. Sylvain Moreno and Dr. Andrew Sixsmith
- Led a project on the cognitive effects of individualized lifestyle interventions in typical aging
- Worked on the development of a new causal model for time series data.
- Co-investigated causal associations between lifestyle factors and traumatic brain injury recovery using the difference-in-differences model.
- Co-led statistical analyses of the UK BioBank and Health and Retirement Study databases to determine factors contributing to healthy aging.

Postdoctoral Fellow   CNRS-LIMOS – France   **May 2022 - July 2022**
Advisor: Dr. Engelbert Mephu Nguifo
- Collaborated with Pfeiffer Vacuum on the creation and publication of a sub-sequence anomaly and concept drift detection algorithm for data streams.
- Co-supervised two Master's students' internships in explainable AI and dimensionality reduction in data streams.

Machine Learning Researcher   Prevision.io – France   **Oct. 2021 - Feb. 2022**
- Contributed to the literature assessment on AI, DevOps, Model-Driven Engineering, and Explainable AI in the context of the European project AIDOaRT.
- Wrote seven technical articles for data science professionals about Prevision.io's products.
- Built a YouTube ads detector application using deep learning.

Doctoral Researcher   CNRS-LIMOS – France   **Oct. 2018 - Oct 2021**
- Developed, implemented (Python), and published two clustering algorithms for health data.
- Collaborated with the Analgesia Institute and Simon Fraser University on the profiling of chronic pain patients for personalized follow-up and profiling of cognitive decline in older adults.
- Supervised 2 students' school projects on chronic pain patient profiling.

Research Intern   CNRS-LIMOS – France   **May 2018 - July 2018**
Advisor: Dr. Violaine Antoine
- Worked on the development of a clustering technique within the belief functions theory.
- Collaborated with Clermont's Rugby Club ASM on data analysis for physical activity recommendations and Simon Fraser University on the profile of cognitive decline in older persons.

Software Developer Intern   Group SETEC – France   **May 2017 - July 2017**

Developed a user interface for a parking lot management program in C#, added new application features, and fixed bugs.

Education
2021 Ph.D. in Computer Science, Clermont Auvergne University, France.
2018 M.Sc. in Computer Science (joint degree; with honors), Clermont Auvergne University, France.
2018 M.Eng. in Applied Mathematics and Modelling (with honors), Clermont Auvergne University, France.
2015 B.Sc. in Applied Mathematics and Applications, University of Fez, Morocco.

Awards and Honours
2022   Mitacs Accelerate Industrial Postdoctoral Fellowship, $89 000
2022   Student-Entrepreneur Competition Finalist, Pépite France, Nantes
2021   Start-up in Smart Irrigation funding, IsDB Smart Economic Grant, $10 000
2019   Start-up in Smart Irrigation funding, eTakara Niger, $11 000
2019   Best Nigerien student in France based on academic performance, Réseau des étudiants Nigériens de France (RENIF)
2019   First place at Data Science Olympics Follow-up Competition, defeated Prevision.io's Automated Machine Learning software and got an offer from the company
2018   Ph.D. funding, Agence Nationale de la Recherche – France, $113 000
2012   Bachelor Scholarship, Moroccan Agency for International Cooperation, $2600

Publications
1. **Abdoul J. Mahamadou***, Carole Federico*, Kristing Kostick-Quenet*, Nicole Martinez-Martin*. (2024). Artificial intelligence for precision medicine: How close to 'personalized' can we really get?. Ethical, Legal, Social, Implications of Genomic Research Annual Meeting.
2. **Abdoul J. Mahamadou**, Lea Goetz, Russ B. Altman. (2024). Individual Fairness Through Reweighting and Tuning. ArXiv:2405.01711.
3. **Abdoul J. Mahamadou**, Emma A. Rodrigues, Vasily Vakorin, Violaine Antoine, Sylvain Moreno. (2024). Interpretable Machine Learning for Precision Cognitive Aging. Cognitive Computation. *Under Review*.
4. **Abdoul J. Mahamadou**, Aloysius Ochasi, Russ B. Altman. (2024). Data Ethics in the Era of Healthcare Artificial Intelligence in Africa: An Ubuntu Philosophy Perspective. American Journal of Bioethics. *Under Review*.
5. **Abdoul J. Mahamadou***, Emma A. Rodrigues*, Vasily Vakorin, Sylvain Moreno. (2024). Interpretable Machine Learning for Precision Cognitive Aging. Cognitive Computation. *Under Review*.
6. **Abdoul J. Mahamadou**, Aloysius Ochasi, Russ B. Altman. (2024). Justice in Healthcare Artificial Intelligence in Africa. Journal of Artificial Intelligence Research. *In preparation*.
7. **Abdoul J. Mahamadou**, Aloysius Ochasi, Russ B Altman. (2024). Transparency in Healthcare Artificial Intelligence in Africa. Developing Word Bioethics. *In preparation*.
8. Katja Andric, Markus Trengove, **Abdoul J. Mahamadou**. (2024). Solving the Data Shortage Challenge Pertaining to Low- and Middle-Income Countries for AI-Enhanced Drug Discovery. *In preparation*.
9. **Abdoul J. Mahamadou**, Emma A. Rodrigues, Vasily Vakorin, Violaine Antoine, Sylvain Moreno. (2024). Lifestyle and Cognitive Longevity: Characterizing Trajectories of Cognitive Performance in Older Adults. *In preparation*.
10. **Abdoul J. Mahamadou**, Emma A. Rodrigues*, Vasily Vakorin, Sylvain Moreno. (2023). Lifestyle Factors and Cognitive Aging: A Personalized Approach. Organization for Human Brain Mapping Annual Meeting.

11. Anne Marthe Sophie Ngo, **Abdoul J. Mahamadou**, Michael F. Mbouopda, Engelbert MN. (2022). DragStream: An anomaly and concept drift detector in data streams. International Conference on Data Mining IncrLearn Workshop.
12. Emma A. Rodrigues, **Abdoul J. Mahamadou**, Violaine Antoine, Sylvain Moreno. (2022). Profiling the Healthy Aging Population: A Machine Learning Approach. Cognitive Neuroscience Society Annual Meeting.
13. Nicolas Kerckhove et al. (2021). eDOL mHealth App and Web Platform for Self-monitoring and Medical Follow-up of Patients With Chronic Pain: Observational Feasibility Study. Journal of Medical Internet Research.
14. **Abdoul J. Mahamadou**, Antoine Violaine, Nguifo Engelbert Mephu, Moreno Sylvain. (2021). Apport de l'entropie pour les c-moyennes floues sur des données catégorielles. Revue des Nouvelles Technologies de l'Information.
15. **Abdoul J. Mahamadou**, Antoine Violaine, Nguifo Engelbert, Moreno Sylvain. (2020). Categorical fuzzy entropy c-means. IEEE International Conference on Fuzzy Systems.
16. **Abdoul J. Mahamadou**, Antoine Violaine, Christie Gregory, Moreno Sylvain. (2019). Evidential clustering for categorical data. International Conference on Fuzzy Systems.

*: Equal Contribution

Online Training
2023   UCSF-Stanford CERSI Immersion Course in Drug Discovery, Development, and Regulation
2022   Research Ethics, Simon Fraser University
2021   Methodological Principles for Transparent Science, Bordeaux University
2020   TensorFlow Data and Deployment, DeepLearning.ai, Coursera.
2020   Deep Learning, DeepLearning.ai, Coursera.
2019   Advanced Data Science, IBM, Coursera.
2019   Introduction to General Data Protection, French National Commission on Informatics and Liberty.

Panels
- Artificial intelligence for precision medicine: How close to 'personalized' can we really get?, Panel at the Ethical, Legal, and Social Implications of Genomic Research Congress, June 2024

Invited Talks
- Abdoul J. Mahamadou. (2023). Algorithmic Fairness in Changing Environments. Stanford Genetic Seminars.
- Abdoul J. Mahamadou. (2023). AI Ethics in Changing Environments. Khulna University of Engineering & Technology.
- Abdoul J. Mahamadou, Emma A. Rodrigues. (2023). Cognitive Health. Gerontology 404, Simon Fraser University.
- Abdoul J. Mahamadou. (2022). IA for Decision-making in Niger. African Development University and Université du Numérique du Niger.
- Abdoul J. Mahamadou, Violaine Antoine, Sylvain Moreno. (2020). Categorical fuzzy entropy c-means. Young African Researcher in France Meeting.

Teaching
Stanford University, **total hours**: **27**
- Foundation of Bioethics, Winter 2024

- Research Ethics Conduct, Fall 2023

African Development University, **total hours**: **30**
- Introduction to Machine Learning, Summer 2022

Clermont Auvergne University, **total hours**: **184**
- Relational Databases, Spring 2020
- Statistics and Probability, Fall 2020
- Information Systems, Fall 2020
- Databases and Web, Fall 2020
- Relational Databases, Spring 2019
- Algorithmic, Spring 2019
- Software Engineering, Spring 2019
- Shell Programming, Spring 2018

Community Service and Volunteering

Mentor   Stanford University – USA   **Jan 2024 – Present**
Mentoring four black students through the Stanford Black Community Services Center Mentorship Program.

Science Council Adviser   African Development University – Niger   **Nov 2022 – May 2023**
Member of the Science Council of the African Development University and AI Program adviser.

Education Programs Coordinator   The Africa I Know (TAIK)   **Oct. 2021 – Sept 2022**
Coordinated the launch of the first TAIK Scholar cohort.

Professional Service   **2018 - Present**
- Artificial Intelligence
- BDA: International Conference on Big Data Analytics
- DSAA: IEEE International Conference on Data Science and Advanced Analytics
- ECML: European Conference on Machine Learning
- ITAT: European Conference on Information Technologies Applications and Theory
- Conference on Complex Networks
- UAI: Conference on Uncertainty in Artificial Intelligence
- ACM SIGKDD: Special Interest Group on Knowledge Discovery and Data Mining
- IJAIT: International Journal on Artificial Intelligence Tools

Languages
English, French, Hausa, Djerma