

Abdoul Jalil Djiberou Mahamadou
Stanford Center for Biomedical Ethics
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EDUCATION

University of Clermont Auvergne

PhD, Computer Science

October 2018-September 2021

Dissertation: [Development of clustering algorithms for categorical data and applications in Health](#)

Examiners: Vincent Barra (University of Clermont Auvergne), Ana Belén Ramos-Guajardo (Universidad de Oviedo), Manuel Ojeda Aciego (Universidad de Málaga)

Advisors: Mephu Nguifo Engelbert (University of Clermont Auvergne), Antoine Violaine (university of Cle Auvergne), Moreno Sylvain (Simon Fraser University)

MSc (with honors; double curriculum), Computer Science

September 2017-September 2018

Dissertation: Health Data Analysis

Examiner: Leger Stephanie (University of Clermont Auvergne)

Advisors: Antoine Violaine (University of Clermont Auvergne), Bouet Marinette (University of Clermont Auvergne)

MEng (with honors; double curriculum), Applied Mathematics and Modelling

September 2015-September 2018

Dissertation: Health Data Analysis (same dissertation as the MSc)

Examiner: Leger Stephanie (University of Clermont Auvergne)

Advisors: Antoine Violaine (University of Clermont Auvergne), Bouet Marinette (University of Clermont Auvergne)

Sidi Mohamed Ben Abdellah University

September 2012-June 2015

BSc, Applied Mathematics

Dissertation: Access to information and communication technologies for young people aged 15 to 40 in Niger.

Examiners: Rahmouni Hassani Aziza (Sidi Mohamed Ben Abdellah University), Ettaouil Mohamed (Sidi Mohamed Ben Abdellah University)

Advisors: Zakari Oumarou (National Institute of Statistics of Niger), Ezzaki Fatima (Sidi Mohamed Ben Abdellah University)

GRANTS, FELLOWSHIPS, HONORS AND AWARDS

- Staford-GSK.ai Postdoctoral Fellowship, 2023
- Mitacs Accelerate Postdoctoral Fellowship, \$89 000, 2022

- IsDB Smart Economic Grant (out of 50 projects), \$10 000, 2022
- Start-up funding from eTakara Niger (out of hundreds of projects), \$11 000
- Best Nigerien student in France based on academic performance, Network of Nigerien Students in France, 2020
- PhD funding, French National Agency of Research, \$113 000
- Bachelor Scholarship, Moroccan Agency for International Cooperation, \$2600

RESEARCH EXPERIENCE

Stanford-GSK.ai Postdoctoral Researcher, Stanford University, Stanford, California

June 2023-Present

- To investigate how AI developers conceptualize and formalize bias and fairness into technical mitigation strategies
- To develop methods for participatory and Alignment of AI
- To investigate how diversity and inclusion are conceptualized in NIH-funded projects (PIs: Dr. Nichol-Martinez Martin and Dr. Mildred Cho)
- To assess the ethical implications of healthcare AI tools used at Stanford Healthcare (PIs: Dr. Michelle Mello and Dr. Danton Char)

Postdoctoral Researcher, Simon Frazer University, Surrey, British Columbia, Canada

August 2022-May 2023

- Used AI and Machine Learning to assess the association between lifestyle activities and cognitive health in older adults in the UK BioBank and Health and Retirement Study databases
- Initiated the development of a causal model for older adults subtyping in cognitive aging

Postdoctoral Researcher, University of Clermont Auvergne, Aubiere, Auvergne-Rhone Alpe, France

May 2022-July 2022

- Collaborated with Pfeiffer Vacuum on the development of anomaly and concept drift detection algorithms for data streams

Machine Learning Researcher, Prevision.io, Nantes, Loire-Atlantique, France

October 2021-February 2022

- Contributed to the literature assessment on AI, DevOps, Model-Driven Engineering, and Explainable AI in the European project AIDOaRT.
- Wrote seven technical articles for data science professionals about Prevision.io's Automated Machine Learning services.

Doctoral Researcher, University of Clermont Auvergne, Aubiere, Auvergne-Rhone Alpe, France

October 2018-September 2021

- Developed new Machine Learning techniques for qualitative data analysis and validated the models on health data.
- Collaborated with the Analgesia Institute and Simon Fraser University on profiling chronic pain patients for personalized follow-up and profiling of cognitive decline in older adults.

Research Intern, University of Clermont Auvergne, Aubiere, Auvergne-Rhone Alpe, France

May 2018-June 2018

- Initiated the development of Machine Learning techniques for qualitative data

- Collaborated with Clermont's Rugby Club ASM on data analysis for physical activity recommendations and
- Worked with Simon Fraser University researchers on determining factors influencing cognitive decline in older persons.

TEACHING EXPERIENCE

Cumulative Hours: 248

Stanford University, Stanford, California, USA

Total Hours: 34

- Foundation of Bioethics, Winter 2024
Role: Teaching Assistant
Duties: Presented a class on Public Health Ethics, held office hours for students, Grading
- Responsible Conduct of Research, Fall 2023, Autumn 2024
Role: Teaching Assistant
Duties: Moderate discussions on RCR cases

African Development University, Niamey, Niger

Total Hours: 30

- Introduction to Machine Learning, Summer 2022
Role: Principal Instructor
Duties: Course material preparation, grading

University of Clermont Auvergne, Aubiere, Auvergne-Rhone Alpe, France

Total Hours: 184

Role: Teaching Assistant

Duties: Grading, theoretical and practical class instructor, ...

- 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

RELEVANT WORK EXPERIENCE

Software Developer Intern, Group SETEC, Vitrolles, Bouches-du-Rhône, France

May 2017-July 2017

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

UNIVERSITY SERVICE

Project Consultant, AI For Good Institute

June 2024 – August 2024

Advised a project group on the ethical, legal, and social implications of healthcare AI

Member of the Stanford Justice, Equity, Diversity, and Inclusion Committee (JEDI), Stanford School of Medicine

February 2024-Present

Participate in the promotion of JEDI at Stanford through regular committee meetings.

Mentor, Stanford Black Community Services Center

January 2024-June 2024

Mentored four black students through the Building a Successful Academic Career program and introduced them to research and career exploration concepts.

Consultant, Stanford Benchside Ethics Consultation Service

July 2023-Present

Consult on ethical issues arising from laboratory and clinical research.

Science Council Adviser and AI Program Adviser, African Development University

November 2022-May 2023

Member of the Science Council of the African Development University to advise on AI curriculum.

Education Programs Coordinator, The Africa I Know

October 2021-September 2022

Coordinated the launch of the first The Africa I Know Scholar Cohort.

Peer-reviewer, Academic Conferences and Journals

October 2018-Present

Reviewed submissions for the following venues:

- International Conference on Big Data Analytics
- IEEE International Conference on Data Science and Advanced Analytics
- Journées de la Recherche en Informatique – Computer Science Research Days
- Conference on Complex Networks and Their Applications
- International Conference on Pattern Recognition and Artificial Intelligence
- European Conference on Information Technologies -- Applications and Theory
- International Conference on Extraction and Knowledge Management

PUBLICATIONS

*: Equal Contribution

1. Anne Marthe Sophie Ngo, **Abdoul Jalil Djiberou Mahamadou**, Michael F. Mbouopda, Engelbert MN. (2022). DragStream: An anomaly and concept drift detector in data streams. International Conference on Data Mining IncrLearn Workshop.
2. 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.
3. **Abdoul Jalil Djiberou 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.
4. **Abdoul Jalil Djiberou Mahamadou**, Antoine Violaine, Nguifo Engelbert, Moreno Sylvain. (2020). Categorical fuzzy entropy c-means. IEEE International Conference on Fuzzy Systems.

5. **Abdoul Jalil Djiberou Mahamadou**, Antoine Violaine, Christie Gregory, Moreno Sylvain. (2019). Evidential clustering for categorical data. International Conference on Fuzzy Systems.

MANUSCRIPTS IN PROGRESS

1. **Abdoul Jalil Djiberou Mahamadou**, Artem Trotsky. (2024). Rethinking technical algorithmic fairness. Annual Review of Biomedical Data Science. *Submitted*.
2. **Abdoul Jalil Djiberou Mahamadou***, Emma A. Rodrigues*, Vasily Vakorin, Violaine Antoine, Sylvain Moreno. (2024). Interpretable Machine Learning for Precision Cognitive Aging. Cognitive Computation. *Under Review*.
3. **Abdoul Jalil Djiberou Mahamadou***, Emma A. Rodrigues*, Vasily Vakorin, Sylvain Moreno. (2024). The Impact of Lifestyle Factors on Trajectories of Cognitive Subtypes in the Older Adult Population. Scientific Report. *Under Review*.
4. **Abdoul Jalil Djiberou Mahamadou**, Lea Goetz, Russ B. Altman. (2024). Individual Fairness Through Reweighting and Tuning. *Preprint*. ArXiv:2405.01711.
5. **Abdoul Jalil Djiberou Mahamadou**, Aloysius Ochasi, Russ B. Altman. (2024). Data Ethics in the Era of Healthcare Artificial Intelligence in Africa: An Ubuntu Philosophy Perspective. *Preprint*. ArXiv:2406.10121.
6. Aloysius Ochasi, **Abdoul Jalil Djiberou Mahamadou**, Russ B. Altman. (2024). Justice in Healthcare Artificial Intelligence in Africa. *Preprint*. arXiv:2406.10653.
7. **Abdoul Jalil Djiberou Mahamadou**, Aloysius Ochasi, Russ B Altman. (2024). Transparency in Healthcare Artificial Intelligence in Africa. Developing World Bioethics. *In preparation*.
8. Katja Andric, Markus Trengove, **Abdoul Jalil Djiberou Mahamadou**. (2024). Solving the Data Shortage Challenge Pertaining to Low- and Middle-Income Countries for AI-Enhanced Drug Discovery. *In preparation*.

PRESENTATIONS AND POSTER SESSIONS

1. **Abdoul Jalil Djiberou Mahamadou**. (2024). Integrating Participatory Methods with Technical Fairness Solutions: Enhancing Bias Mitigation and Equity in AI Systems. NeurIPS Algorithmic Fairness through the Lens of Metrics and Evaluation workshop.
2. **Abdoul Jalil Djiberou Mahamadou**. (2024). Rethinking technical algorithmic fairness. American Society for Bioethics and Humanities Annual Conference.
3. **Abdoul Jalil Djiberou Mahamadou***, Carole Federico*, Kristin 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.
4. **Abdoul Jalil Djiberou Mahamadou***, Emma A. Rodrigues*, Vasily Vakorin, Sylvain Moreno. (2023). Lifestyle Factors and Cognitive Aging: A Personalized Approach. Organization for Human Brain Mapping Annual Meeting.
5. **Abdoul Jalil Djiberou 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.
6. **Abdoul Jalil Djiberou Mahamadou**. (2023). Algorithmic Fairness in Changing Environments. Stanford Genetic Seminars.
7. **Abdoul Jalil Djiberou Mahamadou**. (2023). AI Ethics in Changing Environments. Khulna University of Engineering and Technology.

8. **Abdoul Jalil Djiberou Mahamadou**, Emma A. Rodrigues. (2023). Cognitive Health. Gerontology 404, Simon Fraser University.
9. **Abdoul Jalil Djiberou Mahamadou**. (2022). IA for Decision-making in Niger. African Development University and Université du Numérique du Niger.
10. **Abdoul Jalil Djiberou Mahamadou**, Violaine Antoine, Sylvain Moreno. (2020). Categorical fuzzy entropy c-means. Young African Researcher in France Meeting.

RESEARCH INTERESTS

Ethical, legal, and social implication of healthcare AI
Bioethics
Algorithmic Fairness
AI Alignment
Participatory AI and Community Engagement
Causal Inference
Intersectionality
Research Ethics
Clinical Ethics

TEACHING INTERESTS

AI Ethics from a Technical and Philosophy Perspectives
AI Bias and Fairness
Introduction to AI
AI For Global Health
Introduction to Bioethics
Why Participatory AI and Alignment?
Probability and Statistics
Applied Mathematics
An Introduction to Python and Software Development
Introduction to Causal Inference and Clinical Applications
Responsible Conduct of Research

LANGUAGES

Hausa (Native), Zarma (Native), French (Native), English (Advance)

REFERENCES

David Magnus, Thomas A. Raffin Professor of Medicine and Biomedical Ethics and Professor of Medicine
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