Abdoul Jalil Djiberou Mahamadou, PhD
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RESEARCH STATEMENT

I am excited about developing AI technologies that benefit everyone and interested in contributing to this endeavor through research and development of technical and practical solutions to make AI systems equitable, fair, robust, and safe. I am particularly interested in stakeholder engagement in AI risk assessment, AI pluralistic alignment, and algorithmic fairness.

EDUCATION

University of Clermont Auvergne
Ph.D. in Computer Science 2021
M.Sc. in Computer Science 2018
M.Eng. in Applied Mathematics and Modelling 2018

Sidi Mohamed Ben Abdellah University
B.Sc., in Applied Mathematics 2015

RESEARCH EXPERIENCE

Postdoctoral Researcher 06/2023 – present
Stanford University Stanford, CA
Advisors: Russ Altman, David Magnus, Mildred Cho

- Engaging patients, clinicians, developers, and financial staff through interviews and focus groups to assess context-specific AI deployment risks at Stanford Health Care.
- Conducted qualitative analysis of 38 interview and focus group transcripts and identified stakeholder values collisions and ten non-apparent groups at risk of unintended harm.
- Developed a novel machine learning technique and fairness metric to de-bias AI systems.
- Investigating how AI practitioners integrate and conceptualize diversity, equity, and inclusion in data collection, model development, and deployment.
- Teaching Bioethics and Responsible Conduct of Research and mentored 4 Back Stanford students to build successful academic careers.

Postdoctoral Researcher 08/2022 – 05/2023
Simon Fraser University Surrey, BC

- Initiated the development of a causal discovery technique to determine cause-effect directions between input variables in decision-tree-based machine learning models.
- Used interpretable and explainable machine learning techniques to determine the association between lifestyle activities and cognitive health in large-scale biobank databases to recommend precise cognitive decline interventions in older adults.
- Mentored two PhD and three Master students' projects in cognitive aging.

Postdoctoral Researcher 05/2022 – 07/2022

University of Clermont Auvergne Aubiere, France

- Developed a linear time and memory complexity anomaly and concept drift detection algorithm for streaming data in collaboration with Pfeiffer Vacuum.
- Mentored two Master students' projects in explainable and interpretable AI and dimensionality reduction.

Machine Learning Scientist 10/2021 – 02/2022
Prevision.io Nantes, France

- Assessed the literature on AI, DevOps, and Model Engineering in the European AIDOaRT project context with interdisciplinary and cross-functional teams.
- Collected and labeled images from YouTube to train an Ad detector with state-of-the-art Deep Learning and Computer Vision models.
- Wrote seven technical data science blog posts to explain the Deep Learning and Computer Vision models behind Prevision.io's automated machine learning SaaS**.**

Doctoral Researcher 10/2018 – 09/2021
University of Clermont Auvergne Aubiere, France

- Developed, implemented, and validated two machine learning techniques for qualitative data.
- Collaborated with the Analgesia Institute to develop machine learning techniques for personalized chronic pain patient health monitoring.
- Mentored four Master students' projects in unsupervised learning.

SKILLS

Programming: Object Oriented Programming, Python, SQL
AI Libraries and Frameworks: PyTorch, TensorFlow, Scikit-Learn, Pandas, Numpy
NLP and Computer Vision: Good understanding of state-of-the-art deep learning model architectures like Transformers and their applications in LLMs.

SELECTED PUBLICATIONS

- **Abdoul J. 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
- **Abdoul J. Mahamadou**, Artem A. Trotsyuk. (2024). Revisiting Technical Bias Mitigation Strategies. ArXiv:2410.17433. Accepted for publication in the Annual Review of Biomedical Data Science journal.
- **Abdoul J. Mahamadou**, Lea Goetz, Russ B. Altman. (2024). Individual Fairness Through Reweighting and Tuning. ArXiv:2405.01711.