Abib ALIMI

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LinkedIn

Education

2020 **Ph.D., Computational Neuroimaging**, Inria, Université Côte d'Azur, France.

2016 **M.Sc., Computational Biology and Biomedicine**, Université Côte d'Azur, France.

2015 **M.Eng., Computer Science, Mathematics**, Diplôme d'Ingénieur de l'Ecole Centrale de Lyon, France.

2015 **M.Eng., Computer Science**, Ecole Supérieure Polytechnique, Université Cheikh Anta Diop of Dakar, Senegal.

Experience

Oct 2024 – Ongoing **Independent Researcher AI Safety & Alignment**, *Senegal*.
- Transitioning into Artificial Intelligence (AI) research: technical AI Safety & Alignment.
- Novel Transformer-based model to enhance diffusion MRI microstructure estimation (In prepararion).
- Actively upskilling in AI and software engineering for technical Safety applications, with focus on robustness, interpretability, and reliability of ML models.

2022–2023 **Postdoctoral Research Associate, Princeton University**, *USA*.
- Cross-disciplinary research at the intersection of Artificial Intelligence and Materials Science and Healthcare.
- Data representation for AI-driven neuroimaging models, enabling new applications in Medical Imaging.

2021 April-August **Independent Researcher & Data Scientist, Marseille**, *France*.
- Deep Learning model Uncertainty assessment in Breast cancer classification.
- Representation/latent space generation and t-SNE visualization.
- Tree Detection in urban areas of Marseille within Hack4Nature project.

2016–2020 **Ph.D Candidate at Inria SAM, Université Côte d'Azur, France**,
Three-dimensional Polarized Light Imaging: Towards Multiscale and Multimodal Analysis with Diffusion Magnetic Resonance Imaging, Supervisor: Rachid Deriche.
- Computational Neuroimaging: Mathematical modeling and implementation.
- Diffusion Magnetic Resonance Imaging (MRI): in-vivo reconstruction and validation.
- 3D-Polarized Light Imaging (3D-PLI): Simulation and reconstruction of nerve fibers.

2016 5 months **Research Intern at Inria SAM, Université Côte d'Azur**,
Master thesis: Towards Diffusion MRI-based Tractography via 3D-Polarized Light Imaging.
- Supervisor: Rachid Deriche
- Solving 3D-PLI inclination sign ambiguity by extending Total Variation image restoration method to 3D.
- Mathematical modeling, simulation and 3D-image analysis of brain nerve fibers (Python, Nibabel, Matlab).

2015 6 months **Software Engineer Intern at KLEE Group, Plessis-Robinson**, *France* .
- Statistical analysis and prospecting tool for the Conseil Supérieur du Notariat de France.

2013–2014 8 months **Industrial Research Engineer at IFPEN Energies Nouvelles & Ecole Centrale Lyon**, *France* .
- Design a new industrial spray-dryer to dry aqueous and organic solutions.

Selected Publications

Alimi, A. : Transformer for Diffusion MRI Brain Microstructure Estimation. In prepararion

Alimi, A., Deslauriers-Gauthier, S., Matuschke, F., Müller, A., Muenzing, S. E. A., Axer, M., Deriche, R.: Analytical and fast fiber orientation distribution reconstruction in 3D-Polarized Light Imaging. Medical Image Analysis, Volume 65, 2020, 101760. Link to Journal

Sedlar, S., **Abib A.**, Papadopoulo T., Deriche R., Deslauriers-Gauthier S.: A spherical convolutional neural network for white matter structure imaging via dMRI. MICCAI 2021 – 24th International Conference on Medical Image Computing and Computer Assisted Intervention, Sep 2021, Strasbourg, France. Link to paper

Alimi, A., Deslauriers-Gauthier, S., Deriche, R.: Towards validation of diffusion MRI tractography: bridging the resolution gap with 3D-Polarized Light Imaging, ISMRM 2019 - International Society for Magnetic Resonance in Medicine, M 2019, Montreal, Canada. Link to paper

Sedlar, S., **Alimi, A.**, Papadopoulo, T., Deriche, R., Deslauriers-Gauthier, S.: Spherical convolutional neural network for diffusion MRI analysis. In Sophia Summit (2019, November), Sophia Antipolis, France. Link to presentation

Alimi, A., Usson, Y., Jouk, P.S., Michalowicz, G., Deriche, R.: An analytical fiber ODF reconstruction in 3D-Polarized Light Imaging. ISBI 2018-IEEE International Symposium on Biomedical Imaging, 2018, Washington D.C., USA. Link to paper

Alimi, A., Pizzolato, M., Fick, RHJ., Deriche, R.: Solving the inclination sign ambiguity in three-dimensional Polarized Light Imaging with a PDE-based method. ISBI 2017-IEEE International Symposium on Biomedical Imaging, 2017, Melbourn, Australia. Link to paper

Talks

2019 Talk at ISMRM 28^{th} Annual Meeting & Exhibition, Montreal, Canada

2018 Talk at 15^{th} IEEE International Symposium on Biomedical Imaging, ISBI, Washington DC, USA

2017 Talk at 14^{th} IEEE International Symposium on Biomedical Imaging, ISBI, Melbourne, Australia

Awards & Honors

2019 Magna Cum Laude Award at ISMRM 28^{th} Annual Meeting & Exhibition, Montreal, Canada

2011-2016 Senegalese Government Scholarship

2008 Laureat du Concours General (Senegalese Olympiad, Gymnastics)

Teaching

2017-2018 Teaching Assistant at Department of Computer Science at Sophia Antipolis IUT, Université Côte d'Azur
Software system design using Unified Modeling Language, Supervizing two batches of 16 and 24 students.

Skills

AI & ML Transformers, ML model optimization, Statistical learning

Programming Python, Scikit-learn, Keras, Tensorflow, Pytorch, Git, Linux/Unix, High-dimensional data processing

Business Communication & Collaboration, Dedication, Long-life learning, Market & Product knowledge

Languages Wolof (native), French (native), English (bilingual)

Certifications

2021 **Machine Learning**, Stanford University authorized and offered online through Coursera.

2025 **Mathematics for ML and Data Science**, Linear Algebra, Calculus & Optimization, Statistics & Probability. (in preparation).

Associative & Personal Interests

Gymnastics award winner in national competitions in Senegal, 2 years amateur training in France.
Team Captain of 20+ Football games, Fitness, Swimming. Travelling & discovering Cultures and Food.