



## Yusuf Brima

**Date of birth:** 13/11/1992 | **Nationality:** Sierra Leonean | **Gender:** Male | **Email**

**address:** [ybrima@uos.de](mailto:ybrima@uos.de) | **Website:** <https://yusufbrima.github.io/> | **LinkedIn:**

<https://www.linkedin.com/in/yusufbrima/> | **Twitter:**

[https://twitter.com/\\_yusufbrima](https://twitter.com/_yusufbrima) | **GitHub:** <http://github.com/yusufbrima> |

**Address:** Wachsbleiche 27, D-49090 , Osnabrück, Germany (Work)

### ● EDUCATION AND TRAINING

01/11/2021 – CURRENT Osnabrück, Germany

**PHD IN COMPUTATIONAL COGNITION** Research Training Group in Computational Cognition, Universität Osnabrück

**Address** Wachsbleiche 27 (building 50) , Osnabrück, Germany |

**Website** <https://www.comco.uni-osnabrueck.de/en/startpage.html>

31/07/2020 – 08/07/2021 Kigali, Rwanda

**MASTER OF SCIENCE IN MATHEMATICAL SCIENCES** African Institute for Mathematical Sciences (AIMS)

**Address** AIMS Centre Remera Kigali, Kigali, Rwanda | **Website** <https://aims.ac.rw/>

30/06/2018 – 27/08/2020 Dhaka, Bangladesh

**MASTER OF SCIENCE IN COMPUTER SCIENCE AND ENGINEERING** University of Dhaka

**Address** Department of Computer Science and Engineering Science Complex University of Dhaka, Dhaka – 1000, Dhaka, Bangladesh

**Website** <https://www.cse.du.ac.bd/>

02/09/2012 – 02/02/2017 Makeni, Sierra Leone

**BACHELOR OF SCIENCE IN COMPUTER SCIENCE** University of Makeni

**Address** Azzolini Highway, Makeni, Sierra Leone | **Website** <http://unimak.edu.sl/>

### ● WORK EXPERIENCE

01/11/2021 – CURRENT Osnabrück, Germany

**RESEARCH ASSOCIATE** OSNABRÜCK UNIVERSITY

Conduct basic research at the interface of Cognitive Science and Deep Learning with particular emphasis on building computational models of Individual Recognition -- a ubiquitous phenomenon in social species like humans.

28/02/2017 – CURRENT Makeni, Sierra Leone

**CO-FOUNDER AND DEPUTY DIRECTOR** AFRICAN ACCENTS INTERNATIONAL

- Provide leadership to the Institute, overseeing the strategic development and maintain an awareness of the internal and external environment
- Lead an annual plan of activities and manage budgets and resources
- Lead ongoing research activities

31/01/2018 – 30/07/2018 Freetown, Sierra Leone

**LECTURER** LIMKOKWING UNIVERSITY OF CREATIVE TECHNOLOGY

Taught undergraduate Computer Science courses in Principles of Programming Languages and Introduction to Computing

28/02/2017 – 30/07/2018 Makeni, Sierra Leone

**RESEARCH TEACHING ASSISTANT** UNIVERSITY OF MAKENI

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Taught undergraduate Computer Science courses in Principles of Programming Languages, Introduction to Computing, Web Programming, Relational Database Systems theory and practice. Conducted research into emerging technologies and their socio-economic ramifications on the varied dimensions of human civilization. Supervised final year students in their project and thesis development process(es).

28/02/2017 – 30/07/2018 Makeni, Sierra Leone

**COLLEGE REGISTRAR** AFRICAN ACCENTS INTERNATIONAL INSTITUTE OF COMPUTER TECHNOLOGY

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Provided oversight of enrolment, retention and transfer of students in and out of the institution, co-ordinated with the Finance and Exams Officers in managing operations of the Institution, directed and coordinated college registration activities by consulting with other officials to devise registration schedules and procedures, analyzed statistical data on registration for administrative use in formulating policies, directed the preparation of statistical reports on educational activities for government and educational agencies and interprets registration policies to faculty and students. Directed compilation of information, such as class schedules and graduation requirements, for publication in school bulletins and catalogues.

## ● LANGUAGE SKILLS

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Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
<b>ENGLISH</b>	C2	C2	C2	C2	C2
<b>FRENCH</b>	A1	A1	A1	A1	A1
<b>GERMAN</b>	A1	A1	A1	A1	A1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

## ● DIGITAL SKILLS

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Scientific programming in Python | Latex Software | C, C++ Programming | Machine Learning and Deep Learning frameworks: Tensorflow, Keras, PyTorch | Data Science, Data Analytics, Data Visualization | SQL/MYSQL | GIT (GitHub) | Python libraries (NumPy, Pandas, Keras, SciKit-Learn, TensorFlow, Matplotlib, Seaborn) | Web Development: HTML 5, CSS, JavaScript | Climate Data Operators | NetCDF Operators | Microsoft Office

## ● ADDITIONAL INFORMATION

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### PUBLICATIONS

[What do Deep Neural Networks Learn in Medical Images?](#) – 2022

This work seeks to answer the question: what do deep neural network models learn in medical images? In that light, we present a novel attribution framework using adaptive path-based gradient integration techniques. Results show a promising direction of building trust in domain experts to improve healthcare outcomes by allowing them to understand the input-prediction correlative structures, discover new bio-markers, and reveal potential model biases.

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[Transfer Learning for the Detection and Diagnosis of Types of Pneumonia including Pneumonia Induced by COVID-19 from Chest X-ray Images](#)

– 2021

Accurate early diagnosis of COVID-19 viral pneumonia, primarily in asymptomatic people, is essential to reduce the spread of the disease, the burden on healthcare capacity, and the overall death rate. It is essential to design affordable and accessible solutions to distinguish pneumonia caused by COVID-19 from other types of pneumonia. In this work, we propose a reliable approach based on deep transfer learning that requires few computations and converges faster. Experimental results demonstrate that our proposed

framework for transfer learning is a potential and effective approach to detect and diagnose types of pneumonia from chest X-ray images with a test accuracy of 94.0%.

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#### **Brain MRI Dataset** – 2021

This dataset was curated in collaboration between the Computer Science and Engineering Department, University of Dhaka, and the National Institute of Neuroscience, Bangladesh. It comprises 5,285 T1-weighted contrast-enhanced brain MRI images belonging to 38 categories.

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### **CONFERENCES AND SEMINARS**

05/2018 – 07/2018 – UNESCO-ICHEI, China

**Seminar on ICT in Higher Education Innovation for African Countries**, Attained knowledge in the role of informatization of higher education to improve learning outcomes. The seminar entailed hands-on training in Big Data management with Apache Spark and predictive analytics with Machine Learning techniques to improve learning outcomes.

31/07/2022 – 06/08/2022 – German Primate Center in Göttingen, Germany

**Bridging the technological gap – spreading technological innovations in the study of the human and non-human mind** A workshop that brought early-stage researchers to share ideas on cutting-edge technologies to facilitate animal behavior and cognition research.

Link <https://www.primate-cognition.eu/de/veranstaltungen/bridging-the-technological-gap-workshop.html>

### **PROJECTS**

11/2019 – 03/2020

**Deep Transfer Learning for Multi-class Brain MRI Classification, MSc Thesis** In this research, we adopted a Deep Residual Convolutional Neural Network (ResNet50) architecture for the experiments amongst other discriminative learning techniques to train the model. Using the novel dataset and two publicly available MRI brain datasets, this proposed approach attained a classification accuracy of 86.40% on the proposed dataset, 93.80% on the Harvard Whole Brain Atlas, and 97.05% accuracy on the School of Biomedical Engineering dataset. Our experimental results significantly demonstrate our proposed framework for Transfer Learning is a potential and effective approach for brain tumor multi-classification tasks. The paper is in submission to the IEEE/ACM Transactions on Computational Biology and Bioinformatics journal.

08/2016 – 02/2017

**Automated Recruitment System, BSc. Final year project** Career placement and recommendation engine is written in PHP as the Server-Side Scripting Language; Hyper Text Markup Language 5, JavaScript, JQuery and its ancillary dependencies, Twitter Bootstrap Framework, CSS 3.0, Asynchronous JavaScript and XML, Google Data Visualization Library as the client-side scripting technologies and Apache as the Webserver from the Apache Foundation.

### **ADDITIONAL EDUCATION**

11/09/2022 – 16/09/2022

**Mediterranean Machine Learning school, Università Milano Bicocca, Milan, Italy**

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The Mediterranean Machine Learning (M<sup>2</sup>L) summer school comprised 5 days of keynotes, lectures, and practical sessions covering the breadth and depth of deep learning from cutting-edge research to practice.

11/07/2022 – 29/07/2022

**Neuromatch Academy: Deep Learning**

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The Deep Learning (DL) course covers team-based hands-on training in the theoretical underpinnings and practical approaches of current DL algorithms. The three weeks of intensive training involve the complete DL workflow from data curation to exploratory data analysis to model design, implementation, evaluation, and reporting. These algorithms range from Logistic Regressors to Transformers and everything in between.

Link <https://portal.neuromatchacademy.org/certificate/cad1cc47-7b00-4a8f-8420-18494cff6ed4>

07/2020 – 08/2020

**Oxford Machine Learning Summer School, UK**

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Bayesian ML, Computer Vision, Natural Language Processing, Reinforcement Learning, Causal ML, Topological ML, and Transfer Learning.

07/2020 – 08/2020

**Machine Learning Summer School-INDO, Indonesia**

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Machine Learning Fundamentals, TensorFlow, Convolutional Neural Network, Advanced Topics in Equivariance and Inductive Biases, Bayesian Machine Learning, Information Theoretic Objectives, and Robust Generalization, Computational Morphology, Reinforcement Learning, Probabilistic Generative Models, VAEs and Flows, Deep Learning for NLP, Graph Neural Nets, Transfer Learning for NLP, Multilingual NLP, Super-resolution and its Application to Computer Vision Tasks.

04/2020 – 06/2020

**Imperial College London, UK**

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Linear Algebra, Multivariate Calculus, and Principal Component Analysis.

08/2020 – 09/2020

**MathWorks Training Service, MOOC**

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Deep Learning for Image Recognition.  
Using Pre-trained Networks, Managing Collections of Data, and Performing Transfer Learning.

08/2020 – 10/2020

**LinkedIn Learning, MOOC**

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Introduction to Machine Learning: Supervised, Semi-supervised, Unsupervised and Reinforcement Learning, popular Machine Learning Algorithms (K Nearest Neighbor, Decision Tree, K-mean Clustering, Regression, Naive Bayes).

09/2016 – 10/2016

**On-Campus Internship Programme (OCIP), University of Makeni, Sierra Leone**

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Installation and configuration of software, computer networking, troubleshooting, and maintenance.

**NETWORKS AND MEMBERSHIPS**

01/02/2019 – CURRENT

**IEEE Student Member**

27/08/2020 – CURRENT

**The Association of Commonwealth Universities Alumni**

01/07/2017 – CURRENT Bangladesh

**University of Dhaka Computer Science and Engineering Society**

01/09/2012 – CURRENT Sierra Leone

**University of Makeni Computer Science Society**

31/07/2020 – CURRENT

**African Institute of Mathematical Sciences community**

**SOCIAL AND POLITICAL ACTIVITIES**

01/02/2022 – CURRENT Osnabrück, Germany

**Team Lead: Graduate Assistance Initiative Network (GAIN)** Co-founded a student-run international mentorship network to help underrepresented groups gain access to higher education thus fostering diversity and inclusion.

**Link** <https://gain.uos.de/>

31/08/2014 – 29/06/2015 Makeni, Sierra Leone

**Student President (University of Makeni Computer Science Society)** Provided executive leadership into student affairs and activities including: STEM outreach, computer science education communication through radio and television programmes, debates and public lectures and industry tour.

31/08/2013 – 29/06/2014 Makeni, Sierra Leone

**Student Vice President (University of Makeni Computer Science Society)** Provided executive leadership into student affairs and activities ranging from representation in seminars, workshops, and conferences to extracurricular activities.

## HONOURS AND AWARDS

31/07/2020

**African Institute of Mathematical Sciences (AIMS) Fellowship – Mastercard Foundation Scholarship**

30/06/2018

**Queen Elizabeth Commonwealth Fellowship For Low-and-Middle-Income Countries – The Association of Commonwealth Universities (ACU)**

31/08/2013

**Undergraduate Scholarship National Merit – Government of Sierra Leone**

## VOLUNTEERING

31/03/2015 – 29/06/2017 Makeni

**Acting Head of Department (Information Technology Department), Destiny College of Management Theology and Technology** Leadership and Management: responsible and accountable for setting and advancing the academic strategy of the Department in line with the Institution's strategic plans and direction, developed and sustained appropriate structures for management, consultation, decision-making and communication with staff and students, promoted and represented the Institution both internally and externally, Knowledge Transfer: created and exploited new opportunities for knowledge transfer activity in order to secure additional income streams and new areas of teaching and/or research.

31/01/2017 – CURRENT Makeni

**Deputy Director of academic affairs, African Accents International Institute (AAIL)** Operationalised student enrollment, management and transfer procedures, Developed and controlled student record management system, produced a bi-annual report on: Student mobility in and out of the Institution; rate of enrolment, retention, and migration of students, Student-led evaluation of teaching staff including action-oriented recommendations, coordinated class schedules with room assignments for optimum use of buildings and equipment, prepared student transcripts, certificates amongst other academic-related documents.

## RECOMMENDATIONS

**Professor Mosaddek Hossain Kamal** Thesis Supervisor (CSE, University of Dhaka)

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Professor of Computer Science, and Engineering, University of Dhaka.

Email [tushar@cse.du.ac.bd](mailto:tushar@cse.du.ac.bd)

**Dr. Marcellin Atemkeng** Thesis Supervisor (AIMS, Rwanda)

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Lecturer: Applied Mathematics and Machine Learning; Coordinator: Rhodes AI Research Group (RAIRG); Rhodes University, South Africa.

Email [m.atemkeng@ru.ac.za](mailto:m.atemkeng@ru.ac.za)

**Professor Upama Kabir** Thesis Co-supervisor (CSE, University of Dhaka)

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Professor of Computer Science, and Engineering, University of Dhaka.

Email [upama@cse.du.ac.bd](mailto:upama@cse.du.ac.bd)

**Lakshamana Namamula Rao** Former Head of Department

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Lecturer, Institute of Public Administration, and Management (IPAM), Sierra Leone.

Email [lakshmanarao@ipam.edu.sl](mailto:lakshmanarao@ipam.edu.sl)