Alia Caroline Mahama-Rodríguez

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January 20, 2022

Dear Hiring Manager and Affiliates,

I am writing to express my strong interest in obtaining a position at your company. I strongly feel a position in this company would teach me a copious amount of skills relevant to my academic pursuits and interests as I hope to work in an environment which invites individuals of similar aligned interests, but also takes a prioritization in comprehensive training opportunities for its task force into consideration. I am a recent Biomedical Engineering (Neuroscience minor) graduate and working as a Research Assistant (Contract) at Abbott Neuromodulation in Software Development and Data Analytics however am seeking a full-time position in research.

Following my time volunteering as a Hospital Advocate in the Dallas Area Rape Crisis Center and in the Prison Yoga Project, I had personally met with individuals first-hand who were heavily affected by the implications of traumatic events and ensuing PTSD/cPTSD. This in turn culminated in my research interests combining Biomedical Engineering and Neuroscience to a now highly personable field of research in medicine -- that is quantifying and differentiating maladaptive experiences in the medical arena. My participation in University of Washington-Seattle Center for Neurotechnology's REU Program allowed me to work alongside Dr. Andrea Stocco in a multi-phase project which required the construction of a data analytics pipeline acting as a multi-domain predictive PTSD model; the neural and cognitive markers revealed by data analytics thus offered objected classifiers of post-traumatic morbidity shortly following trauma. They also mapped onto previously documented neurobehavioral mechanisms affiliated with PTSD and demonstrated the implications of data analytics for the clinical differentiation of trajectories. As a conglomeration, Machine Learning and AI in medicine extends beyond description and deficits by enhancing one's understanding of the aberrant cognitive deficits which remain incomplete; and with furthered research efforts, novel theoretical frameworks could be designed to advance the mechanistic hierarchy of certain psychiatric conditions as well as effectively delivering treatments which remain elusive. My presentation of diverse assets stemming in Biomedical Engineering, Software Development and Informatics also has the ability to be transferred to other skillsets within the Bioengineering professional domain.

I am hopeful after the appraisal of my resume, your conglomerate will observe that I am an individual with potential for growth in the academic and professional forefront. I look forward to hearing from you in due course and am eager to contribute my talents, scientific curiosity, and interpersonal proficiency towards the team's efforts.

Best Regards,
Alia Mahama-Rodríguez

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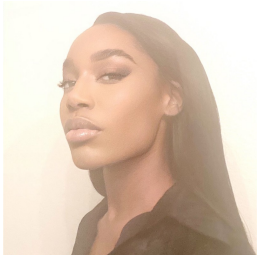

Objective: Highly motivated Biomedical Engineer seeking employment.

Education

University of Texas-Dallas, Erik Jonsson School of Engineering and Computer Science

Major: Biomedical Engineering Minor: Neuroscience (Medical Neuroscience Track)

Graduation Date: December 17, 2021

Fields of Interest

- Neuroimaging, esp. magnetic resonance imaging
- Network analysis of the brain, Cognitive Architecture and Computational Psychiatry
- AI, Machine Learning and Neuroimaging-- analysis of robustness and comprehensibility of 'intelligent' software systems

Research Experience

Volunteer
Comparative Cognition/Animal Behavior Laboratory- Mayagüez, Puerto Rico

- July 30, 2016-August 20, 2016
- May 05, 2017-June 22, 2017

Intern
Research and Outreach Cichaz Lab/Department of Environmental Conservation
Calnali, Hidalgo, Mexico (Rosenthal Laboratory, Texas A&M)

- Carried out research locally on effects of urbanization on natural resource conservation
- Provided talks in local primary schools pertaining to:
    - Ecology and conservation of landscapes, watersheds, and estuarine ecosystems
    - Ecology and conservation of plant and animal populations

Undergraduate Research Assistant **August 2018-February 2019**
Supervisor: Dr. Francesca Filbey, Center for BrainHealth Filbey Group

Research Assistant **October 2019-March 2020**
University of Texas-Dallas, Erik Jonsson School of Engineering and Computer Science
Supervisor: Dr. Kenneth Hoyt, Ultrasound Imaging and Therapy Laboratory

Intern **August 04, 2020-October 11, 2020**
Medical Templates A.G., *Munich, Germany*

Research Intern **January 19, 2021- May 10, 2021**
UT Southwestern Medical Center Department of Physical Medicine and Rehabilitation, *Dallas, TX, USA*
Supervisor: Dr. Yasin Dhaher, Ph.D.

- TMSpine project

Research Technician (Bioinformatics) **January 14, 2021-Present**
UT Southwestern Medical Center Department of Internal Medicine, *Dallas, TX, USA*
Supervisor: Dr. Isaac Chan, M.D., Ph.D.

- Curate and manage large dataset, gather end user requirements
- Work as a member of a team to develop algorithms for analysis of NGS data
- Evaluate new opportunities in algorithm and/or software development related to RNA-seq NGS applications.

Research Intern **June 15, 2021-August 20, 2021**
Center for Neurotechnology Summer Research Experience for Undergraduates, *Seattle, Washington, USA*
Supervisor: Dr. Andrea Stocco, Ph.D. , Cognition and Cortical Dynamics Laboratory

- Design and integrate multi-domain computational models in accordance with ACT-R neuro-cognitive architecture on the biological interpretation of intrusive memories in Posttraumatic Stress Disorder (PTSD) patients. Software pipeline acts as a predictive measure to output patient severity trajectories.

Research Assistant, Contract
Abbott Healthcare, Neuromodulation November 08, 2021 - Present

Technical Expertise

Neuroimaging analysis software/pipelines	NiPype, Camino (Diffusion MRI), DiPy
Programming Languages	MATLAB, Python, Java, JavaScript, C++, R, ClojureScript, ACT-R (Cognitive Architecture), SQL, Ruby, Perl
Operating Systems	Linux, OSX, DICOM, TensorFlow, PyTorch
Data Analytics	Apache Spark, Tableau

Professional Membership

2018- Present	Biomedical Engineering Society
2018-Present	National Society of Black Engineers

Relevant Coursework

Neuroanatomy & Neuropathology
Quantitative Anatomy and Physiology for Engineers
Signals and Systems in Biomedical Engineering
Biomedical Image Processing
Advanced Computational Skills for Biomedical Engineers
Feedback Systems in Biomedical Engineering
Electrical/Electronic Circuits
Medical Imaging Systems and Methods
Medical Neuropathology

Design Projects

University of Texas at Dallas - Senior Capstone Project: Physical Defense Simulator

- Client: Dr. Gil Salazar and Dr. Maria Box in affiliation with University of Texas Southwestern Medical Center (Dallas, TX, USA)
- Design robotic interface training tool which allows healthcare workers to practice recognition, prevention, and mitigation of physical attacks in clinical environments.
- Skill Set(s): Arduino, C++

Art Embedding by Style

- Visualized a collection of network images by style similarity, as defined in A Neural Algorithm of Artistic Style.
- Specified a folder of images and the program generated a two-dimensional scatterplot in which each data point represents an image in the folder and images which are stylistically similar share a closer distance.
- Embeddings generated by feeding each image through a 19-layer VGG convolutional neural network.

Visualizing Sound with Artificial Intelligence and Machine Learning

- Designed a novel repository based on PyTorch (and Pout.py) which transforms audio to image/.jpg data type.
- Implemented Pix2Pix model where transformed data type is fed to the system as input and the output conforms to a novel conceptual model which represents the 'audio experience' to an optimized visualized sequence.
- Application of mathematical principles to select the desired algorithm that suits final needs as well as deciding on validation strategies and approximating confidence intervals.
- Skill Set(s): Python, PyTorch, TouchDesigner, Data Modeling and Evaluation, Signal Processing, Audio/Video Processing, Reinforcement Learning, Applied Mathematics

Voltage Clamp PID Controller, Biomedical Feedback Systems Laboratory

- Stimulated a voltage clamp PID controller for experience**
- Utilized the Hodgkin-Huxley Model to implement the controller; acted to essentially "freeze" the neuron at particular voltages, which allowed for the gathering of data concerning neuronal behavior at each stage in an action potential.
- Skill Set(s): MATLAB, LabView, Principles of Neurobiology

Artificial Pancreas Project, Biomedical Feedback Systems Laboratory

- Simulated automated and non-automated controller to deliver a bolus of insulin when blood glucose levels were high for the automated, or when a meal was announced for the non-automated prototype.
- Utilized the Bergman Minimal Model for controller implementation.
- Skill Set(s): LabView

Leadership & Miscellaneous Affiliations

Director of Philanthropy, Biomedical Engineering Society, UT Dallas Chapter	August 2020- May 2021
Gallery Assistant, Contemporary Art Gallery	January 2017-February 2020
Community Outreach, Dallas Children's Advocacy Center	January 2019-Present
Staff and Hospital Advocate, Dallas Rape Crisis Center	May 2020-Present
Volunteer, Prison Yoga Project	May 2020-Present
Research Chair, Biomedical Engineering Journal Club	August 2021-December 17, 2021
Mentor, Women Mentoring Women in Engineering	January 2022-Present

Languages Spoken

Spanish (Puerto Rican Native, C2)
Asante twi/ Akuapem twi (C2)
French (C1)
English (C2)
German (B1)
Italian (B2)

References

Available upon request.