Chidera Biringa

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Education

University of Massachusetts Dartmouth — MA, US

College of Engineering, ABET Accredited

Ph.D. in Engineering and Applied Science (Computer Science and Information Systems) — September 2021 - Present

- Grade Point Average: 4.0/4.0
- Research Interest: Cybersecurity, Software Performance, and Machine Learning

University of Massachusetts Dartmouth — MA, US

College of Engineering, ABET Accredited

M.S. (Master of Science) in Computer and Information Science — September 2019 - Present

- Grade Point Average: 3.74/4.0

Bells University of Technology — Ota, Nigeria

College of Natural and Applied Sciences

B.Tech. (Bachelor of Technology) in Computer Science and Information Technology — November 2013 - May 2017

Professional Experience

College of Engineering - UMass Dartmouth — September 2021 - Present

Graduate Research Assistant

- Currently performing research on fuzzing using reinforcement learning and security exploits that originate from vulnerability in the Instruction Set Architecture (ISA)

Cybersecurity Center — May - September 2021

Graduate Research Fellow and Mentor

- Conducted research on software performance and reliability with Dr. Gokhan Kul and Dr. Lance Fiondella
- Mentored two undergraduate students towards the completion of their Research Experience for Undergraduates (REU) program

CIS Dept. - UMass Dartmouth — September 2020 - May 2021

Graduate Research Assistant

- Research assistant for Dr. Gokhan Kul (Interest: Cybersecurity and Database Systems)
- Developed an Automated User Experience Testing System methodology through multi-dimensional performance impact analysis

NSA/DHS Center of Academic Excellence in Cyber Defense - UMass Dartmouth — September 2020 - Present

Graduate Fellow

- Fellow at the NSA/DHS Center of Academic Excellence in Cyber Defense at the UMass Dartmouth under the supervision of Dr. Lance Fiondella

CIS Dept. - UMass Dartmouth — September - December 2019

Graduate Student Grader

- Former grader for the undergraduate course: *Software Process and Project Management*
- Graded assignments, projects, and exams

CIS Dept. - UMass Dartmouth — August 2019

iOS Camp Instructor

- Worked as an instructor at the UMass Dartmouth iOS Mobile App Development Camp under the supervision of Dr. Raymond N. Laoulache
- The team taught campers programming, problem-solving and iOS mobile app development using the Swift 5 programming language

Amuwo-Odofin Secondary School — Port Harcourt, Nigeria

Information Technology Teacher - NYSC — May 2017 - April 2018

- Worked as an Information Technology teacher at Amuwo-Odofin IT Department
- Taught Information Technology to 9th-grade students

Nigerian National Petroleum Corporation — Port Harcourt, Nigeria

Software Engineering Intern — May - August 2015

- Worked as a software engineer at the NNPC/PPMC ETSD Department
- Developed webpages for the engineering section of the company
- Updated the software of over 100 desktop computers and laptops in the refinery

Publication

Papers March, 2021

- Chidera Biringa, Gokhan Kul. 2021. Automated User Experience Testing through Multi-Dimensional Performance Impact Analysis. *In Proceedings of the ACM/IEEE 2nd International Conference on Automation of Software Test*
- *Submitted* – Chidera Biringa, Gokhan Kul. 2022. A Source Code Evaluation Framework for Automated Quality of Experience Testing. *In Proceedings of the IEEE/ACM 44th International Conference on Software Engineering (ICSE)*

Technical Skill

Programming Languages	C, C++, Java, Python, R, SQL, HTML/CSS, JavaScript
Databases	MySQL, NoSQL
Libraries, Packages	Pytorch, Scikit-Learn, Caret, OpenCV, Pandas, Bootstrap, Quanteda, Tidyverse, Git
Software	GitHub, VSCode, MS Office, LaTeX, Power Bi, Tableau, Godot, Travis CI
Programming Paradigms and others:	OOP, FP, PP, IP, Agile Development, MVC, UML, Unit Testing, Integration Testing

Technical Experience

Intelligent Security Defense with Deep-Reinforcement Learning
September 2021 - Present

- Currently researching on a deep-reinforcement learning technique to intelligently addresses a software security vulnerability
- The present use-case is in the area *Fuzzing*

SEF | Source Code Evaluation Framework
August 2021 - September 2021

- Developed a source-code based evaluation framework for software performance learning
- SEF provides a zero upfront effort performance estimation method and presents the evaluation of the automated QoE testing method

MPSS
June 2021 - September 2021

- Developed a Jenkins plugin for continuous code monitoring and code impact estimations
- MPSS automatically hooks Java-based software projects on GitHub and continuously monitors repository code update to provide feedback to developers on the impact of those updates

Master's Thesis | Multi-Dimensional Performance Impact Analysis of Security Updates in Software Development Lifecycle
September 2020 - March 2021

- Developed a novel automated user experience testing methodology
- Built a pipeline of regression models capable of learning how code changes impact the test time unit of a software
- Created a robust code stylometry feature set using layout, lexical and syntactic features
- Created a benchmark dataset to enable experiments in software engineering research

Neural Network Model | Predictive Frame Inference (PIF) Model
April - May 2020

- Built an encoder-decoder convolutional neural network that can interpolate in-between frames of a given video thus increasing the frame rate
- A high definition 25 fps video was increased to 50 fps without loss in resolution, reduced length of the video, or noticeable distortions

Database System | SQL Query Evaluator
February - April 2020

- Built an SQL query evaluator for a single-threaded database that can run TPC-H queries
- Implemented support for Select, Project, Cross Product, Union, and Aggregate operations
- Implemented standard optimization techniques like projection pushdown, selection pushdown & cross product to join conversion

Classification Model | Authorship Attribution
November - December 2019

- Built a random forest classification model that predicts Victorian Era Authors based on their authored novels
- Sentiment features were extracted and used as features in the model

Classification Model | Customer Response Chatbot
December 2019

- Built a Support Vector Machine (SVM) classification model to classify company response to customers inquiries
- The model was able to predict 3 correct responses from 5 sequential questions

Web Development | Lines
May 2020

- Built a personal portfolio website to showcase some of my work
- Built using HTML5, CSS3, and Vanilla Javascript

Civic Engagement Experience

Startup Weekend - UMass Dartmouth
February 2021

Technical Mentor

- Volunteered to help participants with technical problems
- Dedicated 8+ hours to assist participants