

# 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

- Research Area: Secure Software Development. Proactive Software Security

### University of Massachusetts Dartmouth

MA, US

College of Engineering, ABET Accredited

M.S. (Master of Science) in Computer and Information Science (Honors)

September 2019 - December 2020

- Award: CIS Graduate Research Award Recipient

### Bells University of Technology

Ota, Nigeria

College of Natural and Applied Sciences

B.Tech. (Bachelor of Technology) in Computer Science and Information Technology (Honors)

November 2013 - May 2017

## PROFESSIONAL EXPERIENCE

### College of Engineering - UMass Dartmouth

September 2021 - Present

Graduate Research Assistant

- Currently performing research on proactive software security, secure software development, backdoor attacks and intrusion detection systems

### NSA/DHS Cybersecurity Center - UMass Dartmouth

May 2020 - Present

Graduate Student Research Fellow and Mentor

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

### Computer and Information Science Department - 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

## PUBLICATION

- Chidera Biringa<sup>1</sup>, Gokhan Kul. 2021. "Automated User Experience Testing through Multi-Dimensional Performance Impact Analysis." ACM/IEEE 2nd International Conference on Automation of Software Test
- Chidera Biringa<sup>1</sup>, Gokhan Kul<sup>1</sup>. 2022. "Forensics in Cyber-Physical Systems (CPS)." Springer Cyber Forensics for Cyber-Physical Systems.
- Chidera Biringa<sup>1</sup>, Gaspard Baye and Gokhan Kul. 2022. "Static and Microarchitectural ML-Based Approaches For Detecting Spectre Vulnerabilities and Attacks." Hardware and Architectural Support for Security and Privacy (HASP), In Conjunction With the 55th IEEE/ACM International Symposium on Microarchitecture (MICRO).
- Chidera Biringa<sup>1</sup> and Gokhan Kul. 2022. "A Secure Design Pattern Approach Toward Tackling Lateral-Injection Attacks." The 15th IEEE International Conference on Security of Information and Networks (SIN).

## TECHNICAL SKILL

Coding, Algorithms, Mathematics, Artificial Intelligence/Machine Learning, Databases, Systems Design, Offensive, and Defensive Cybersecurity

## TECHNICAL EXPERIENCE

### iFuzz | Intelligent Fuzzing using Deep-Reinforcement Learning

September 2021 - December 2021

- Utilized Markov Decision Process (MDP) to deploy a multi-agent Actor-Critic (AC) Reinforcement learning (RL) technique to identify bugs via mutation and software coverage

### 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 optimized 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

### 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

## SERVICES

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- Very Large Data Base (VLDB) Reproducibility Reviewer. 2021
- Startup Weekend UMassD Technical Mentor. 2021 & 2022

## REFERENCES

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**Dr. Gokhan Kul. gkul@umassdedu. 508-910-6484**

Assistant Professor and Ph.D Supervisor. University of Massachusetts Dartmouth

**Dr. Lance Fiondella. lfiondella@umassd.edu. 508-999-8596**

Director, NSA/DHS Cybersecurity Center. University of Massachusetts Dartmouth